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ADDRESSES AND ORIGINAL ARTICLES

VITAMIN-K LACK IN NORMAL AND SICK INFANTS

BY H. DAM, E. TAGE-HANSEN AND P. PLUM

(From the University Biochemical Institute and the Rigshospital, Copenhagen)

THIS work began when we saw a boy aged 26 days with jaundice, a hæmorrhagic state and anæmia. With the possibility of vitamin-K lack in mind we examined the clotting power of the blood by a method which indicates specially the blood-prothrombin. A great reduction of prothrombin was found and the child was therefore treated with vitamin K. The hæmorrhagic state disappeared within 48 hours of giving the vitamin. Later we examined the prothrombin in infants suffering from similar states icterus gravis, hæmorrhagic state and anæmia, erythroblastosis and hydrops congenitus). In all a pronounced reduction of prothrombin was found. These cases were compared with a number of normal infants with and without "physiological" icterus neonatorum.

TECHNIQUE

The blood-coagulation was estimated by the method of Dam and Glavind (1938). Exactly 2 ml. of venous blood is taken through a cannula and placed in a centrifuge-tube containing 0·1 ml. of heparin solution (prepared by dissolving 3 mg. of "Leo" heparin in 2 ml. of Ringer's solution). After mixing and centrifuging, the clotting-power is determined by use of an extract of human brain. The concentration K of the brain-extract which just coagulates the plasma in 3 minutes, when 1 drop of the extract is added to 4 drops of plasma, is determined. A corresponding determination is made on normal plasma (K_n). The quotient R (or K/K_n) is a measure of the alteration in coagulation, while the reciprocal value 1/R (or K_n/K) is a measure of the ability to coagulate with tissue-extract. When the fibrinogen content is not grossly reduced and certain other factors are constant, the ability to coagulate with tissue-extract depends only on the prothrombin content and is approximately proportional to the concentration of prothrombin. In normal plasma R is 1. If R is 100, the prothrombin content is only about 1 per cent. of the normal. In the following description, coagulation is measured in R-value. In some cases, especially where the plasma did not coagulate at all, the fibrinogen content was also determined by Gram's method (1921). The blood was taken from a temporal vein.

Vitamin-K concentrations were prepared by the method described by Dam, Geiger, et al. (1939). As we had only a limited amount of pure vitamin K available, we did not use the pure vitamin itself but a concentrate containing about 10 per cent. of pure vitamin K_1.

CASE-HISTORIES

CASE 1.—Boy aged 26 days; admitted to the Rigshospital, children's department, on March 18, 1939. Birth-weight 4 kg.; breast-fed; very jaundiced continuously since birth; did not look really ill until 3–4 days before admission; child then bled from a small scratch near the nose for about 12 hours; on day before admission vomited some fresh blood.

On examination: Child looked ill, prostrated, very jaundiced, and anæmic; petechiæ on oral mucosa and two ecchymoses on the back; liver, spleen and lymph-glands not enlarged; no pyrexia; stools greenish-yellow; urine dark, sugar and bile pigments present.

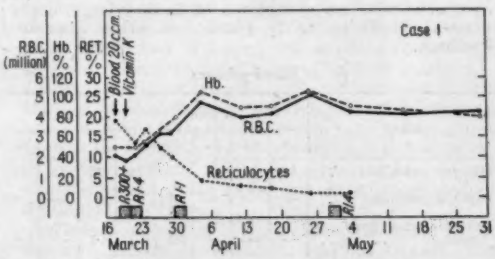
Blood-picture: Hb. 50 per cent., R.B.C.s 2·07 million, W.B.C.s 9700. One erythroblast to every 100 leucocytes. Pronounced anisocytosis, poikilocytosis and polychromasia. Platelet-count normal. Fragility of red cells: hæmolysis begins with 0·42 per cent. NaCl, and is complete with 0·30 per cent.

Prothrombin determination:

March 20, R more than 300; March 22, R = 1·4; March 31, R = 1·1; May 1, R = 1·4;

Treatment and progress: A few hours after admission 20 c.cm. of the mother's blood was put into one of the child's temporal veins. The next three days there were repeated small muscle-spasms in the face and limbs. Two days after the transfusion the

FIG. 1



number of R.B.C.s had fallen from 2·07 million to 1·83 million. As, despite the transfusion, the amount of prothrombin was found to be greatly reduced, vitamin K was given. Through a stomach-tube 6 mg. concentrate was administered (10,000 units in an emulsion with 100 mg. of the sodium salt of des-oxycholic acid), and 40,000 units vitamin K in 0·5 c.cm. of oil was given intramuscularly as well. On March 22, 41 hours after the K-vitamin administration, the amount of prothrombin was normal (R = 1·4) and it remained normal. The general condition and blood-picture quickly improved (fig. 1). When discharged on May 5 the patient was still a little jaundiced, but otherwise quite well. On two later examinations his condition was satisfactory and the jaundice had completely disappeared.

Diagnosis: Icterus gravis with hæmorrhagic state and anæmia.

CASE 2.—Boy aged 1 day; admitted to Rigshospital on May 25, 1939; died 45 minutes after admission. The child is the fourthborn of a mother, who has for many years taken thyroidin; the first was stillborn, the third an abortion, while the second is now eleven years old and healthy; father in good health.

Born at full term by natural delivery. Birth-weight 3·7 kg; neonatal asphyxia, recovered after artificial respiration for half an hour; skin at birth already patchy; a few hours before admission there was a sudden large hæmorrhage from the rectum, after which the child lost consciousness.

On examination: Child was moribund and died 45 minutes later; skin was jaundiced and covered everywhere with hæmorrhages of various sizes. Eighteen minutes after death blood was taken from the heart. It had not coagulated and did not do so for several hours. It was obviously anæmic and the plasma was very icteric.

Prothrombin determination: R more than 300 (i.e. prothrombin extremely reduced). Nucleated R.B.C.s 16 per cent.

At autopsy the organs were found to be anæmic and icteric with ecchymoses everywhere; the small

intestine was hæmorrhagic throughout its whole length, while the stomach and large intestine showed no macroscopic changes. Microscopic examination showed great erythropoietic activity of the liver with numerous big and small foci of erythroblasts.

Diagnosis: Icterus gravis with hæmorrhagic state and anæmia.

CASE 3.—Girl aged 13 days; admitted to Rigshospital, June 23, 1939. Parents in good health. Child is seventhborn; first child a healthy girl; second a full-term girl, jaundiced at birth, died when 8 days old of jaundice and intestinal poisoning; third a full-term boy, stillborn with hydrocephalus; fourth a full-term boy, stillborn and macerated; fifth a full-term girl, stillborn; sixth a boy, born 3–4 weeks prematurely, jaundiced at birth, died half an hour after birth. The patient had a twin-brother (case 4).

Born 2–3 weeks prematurely. Birth-weight 3050 g. Obviously jaundiced at birth. On June 19 Hb. 40 per cent. and 25 c.cm. of the mother's blood was given into the sagittal sinus. On the 20th 40 c.cm. of blood was given into the sagittal sinus.

On examination (June 23): Very pale, only a little jaundiced; subconjunctival hæmorrhage in right eye, otherwise no symptoms of hæmorrhagic state; general condition fairly good; no other abnormal findings.

Blood-picture

Date	June					July		
	19	22	24	26	28	1	5	8
Hb. per cent.	40	38	26	—	24	25	45	41
R.B.C.s (million)	—	—	—	1·01	—	—	—	1·68
Reticulocytes (per cent.)	—	—	—	0·3	1	1	—	5·6

Date in July	11	13	14	15	18	22
Hb. (per cent.)	41	42	48	—	48	52
R.B.C.s (million)	1·77	1·75	—	1·96	2·33	—
Reticulocytes (per cent.)	3·8	9·0	12·0	22·0	28·3	18·0

Leucocytes, June 26: 15,680; July 14: 34,250.

Prothrombin determination, June 16: R over 300. June 27, blood was noticed to coagulate quickly in the pipette.

Icterus index (Meulengracht), June 16: 50.

Treatment and progress: The general condition and the blood-picture improved slowly. On July 10 vitamin K (4000 units) was given intravenously. When one compares the patient's blood-regeneration with that of his twin-brother, who was not treated with vitamin K, it appears as though the improvement was independent of the treatment.

Diagnosis: Anæmia neonatorum with icterus neonatorum.

CASE 4.—Boy aged 13 days. Twin-brother of case 3; admitted to the Rigshospital on June 23, 1939; died July 20. Birth-weight 2400 g. Very jaundiced at birth. As the child was pale and weak, and the Hb. percentage on June 19 was 20, 25 c.cm. of the mother's blood was given into the sagittal sinus. On June 20 40 c.cm. blood was given from another donor.

On examination (June 23): Small, thin, very anæmic, and only slightly jaundiced. No symptoms of hæmorrhagic diathesis. The liver was just palpable. The spleen was not palpable.

Leucocytes, June 26: 9100; July 14: 16,200; erythroblasts, 12 per cent.

Prothrombin determination, June 16: R more than 300. June 21: R = 0·7.

Icterus index, June 16: 60.

Treatment and progress: As the Hb. percentage was falling, despite the two transfusions on June 19 and June 20, blood was again given on July 8, 40 c.cm. into the sagittal sinus. From June 26 to July 2 "Hepsol" (a liver preparation) was given daily, 2 c.cm. intramuscularly. The patient became worse and despite another transfusion on July 20 of 80 c.cm. the child died.

Diagnosis: Anæmia neonatorum with icterus neonatorum.

Blood-picture

Date	June						July		
	19	22	24	26	28	29	1	4	7
Hb. (per cent.)	20	42	38	—	32	36	31	34	39
R.B.C.s (million)	—	—	—	1·79	—	—	—	—	—
Reticulocytes (per cent)	—	—	—	4	3	0·2	—	—	0·2

Date in July	8	9	10	11	13	15	16	18
Hb. (per cent.)	30	26	26	28	35	38	—	35
R.B.C.s (million)	1·38	0·93	—	1·22	1·31	—	1·62	1·77
Reticulocytes (per cent.)	0·4	5	7·3	5	7·5	23	20	19

CASE 5.—Girl aged 9 days; admitted to Rigshospital on April 27, 1939; discharged May 18. Father in good health; mother had pyelitis during pregnancy; one previous child a girl, was born by artificial induction, 2 months prematurely, owing to the mother having jaundice and pyelitis; this child died shortly after birth.

Born naturally at full term. Weight at 9 days 3300 g. Neonatal asphyxia relieved by artificial vigorous respiration; extreme jaundice which later diminished, and at the same time she became very pale, weak and apathetic; motions fairly dark.

On examination: General condition fair; very anæmic, slightly jaundiced; on the abdomen and nates some small ecchymoses: liver down to umbilicus; spleen 2 c.cm. below ribs.

Blood-picture

Date	Apr.	May							
	28	1	3	4	6	8	9	12	16
Hb. (per cent.)	43	41	—	—	53	65	—	65	62
R.B.C.s (million)	1·69	2·25	2·60	—	3·20	3·38	—	3·60	3·30
Reticulocytes (per cent.)	4	13	6	11	6	7	5	5	—

April 28. Erythroblasts, 2 per 100 leucocytes.

Prothrombin determination, May 1: R = 5·7.

Icterus index, May 1: 7.

Treatment and progress: The general condition and the blood-picture improved quickly without treatment.

Diagnosis: Icterus neonatorum with hæmorrhagic state and anæmia.

CASE 6.—Boy aged 14 days; admitted to Rigshospital on July 14, 1939. No similar cases in the family; mother in good health during pregnancy until 14 days before delivery, when œdema of the legs developed and gradually reached the abdomen. The urine contained albumin, erythrocytes, leucocytes and cylinders. After delivery the œdema quickly disappeared and she was discharged 14 days after delivery.

Born by natural delivery at full term; birth-weight 3550 g. Neonatal asphyxia and enormous œdema of the lower extremities and the lower part of the abdomen; abdomen very distended. During the first 24 hours the child became cyanotic and dyspnœic several times. The œdema increased and

spread to the thorax and head. During the following days the condition continued poor.

On examination (July 14): weak child with enormous universal œdema; skin jaundiced and cyanotic when the child cried. An elongated ecchymosis, above and below right eye, and a little fresh blood at the umbilicus. Râles at the bases of the lungs; liver and spleen not enlarged. Microadenitis in the neck and axillæ, but not in the inguinal regions.

Blood-picture

Date	July 8	July 16
Hb. (per cent.)	140	135
R.B.C.s (million)	4·30	4·81
Reticulocytes (per cent.) ..	1	1

Leucocytes, July 8th: 10,700.

Prothrombin determination, July 8, before treatment: R more than 200. 4 hours after the intravenous administration of 4000 units vitamin K, R = 127. July 10 (41 hours after the administration): R = 4–5. July 14: R = 2.

Icterus index, July 8: 45; July 14: 45.

Treatment and progress, July 8: vitamin K was given, as mentioned above, after which blood-coagulation became normal. On July 18 the œdema had almost completely disappeared and the general condition was much improved. The child is still under treatment.

Diagnosis: Congenital hydrops with icterus.

CASE 7.—Boy 3 days old. Born in the maternity department of the Rigshospital on June 19, 1939. Discharged June 28. Mother in good health during her pregnancy, apart from a little œdema of the legs. Born naturally at full term; birth-weight 3000 g. When the child was 3 days old he had several coffee-ground vomits. The motions were dark and showed a strongly positive benzidine reaction.

On examination: Apart from moderate jaundice there were no abnormal findings. June 22, Hb. 120 per cent. Blood-plasma moderately icteric.

Prothrombin determination, June 22: R = 26.

Progress: The hæmorrhagic vomits ceased after a few days; since then no symptoms of hæmorrhagic diathesis; discharged when 9 days old.

Diagnosis: Icterus with hæmorrhagic state and hæmatemesis.

In addition, 28 other infants were examined as to their R-values, icterus index and red-cell counts and hæmoglobin readings. The findings are recorded in table I. The R-values of the cases described as well as of the normal infants are shown in fig. 2.

DISCUSSION

It was found that, in a group of infants with certain diseases, the clotting power (prothrombin content) of the blood was much reduced, while in normal infants there was a moderate reduction during the first week after birth. The infants with much reduced prothrombin (i.e., with much increased R-values) were suffering from icterus gravis with anæmia and bleeding (2 cases), 2 cases of anæmia neonatorum with icterus, hydrops congenitus with icterus but without anæmia (1 case) and finally moderate hæmorrhagic diathesis (hæmatemesis) without significant anæmia or icterus (1 case). Of these 6 infants with much reduced prothrombin, only 3 actually bled, while the other 3 had anæmia and icterus (2 cases) and hydrops (1 case) and only a latent bleeding tendency.

The symptoms of these children belong to a clinic triad which it has been suggested are related—namely, *icterus gravis neonatorum, anæmia neonatorum* and *hydrops congenitus*.

Hæmorrhagic state in newborn: Slight degrees of hæmorrhagic diathesis are common in the newborn, but severe cases are rare. The hæmorrhages may occur as a symptom per se or they may accompany other diseases. They are most frequently seen in the first week after birth (from the 2nd to the 5th day) and appear as hæmorrhages from the intestine, urinary tracts, vagina, mouth, stomach or skin. In most cases they disappear without treatment, and are not followed by bleeding tendency, but in rare cases they may be so severe that death occurs. The treatment consists of blood-transfusion which has a momentous effect.

Many theories were put forward to explain the bleeding tendency until it was shown that the blood of the newborn clots more slowly than the blood of older infants (Rodda 1920, Beveridge 1928). Brinkhous, Smith and Warner (1937) showed that the prolonged clotting time in normal infants is due to a decrease in prothrombin. These authors further showed, in accordance with Whipple (1912), that some cases of hæmorrhagic diathesis in infants was characterised by decrease in prothrombin. Schwarz and Ottenberg (1910) found a considerably reduced clotting power of the blood in 2 cases of hæmorrhagic diathesis in newborn.

While the present investigation was being carried out two papers of Waddell, DuPont Guerry, Bray and Kelley (1939) and Waddell and DuPont Guerry (1939) appeared, in which they demonstrated that in normal infants prothrombin estimated by Quick's method (1935) decreases in the first days after birth and then attains normal values within 8 days. They also found that ingestion of vitamin K may in a very short time (a few hours) raise the prothrombin to normal. Our results are in full agreement with the findings of these authors. Two infants both aged 4 days and having R-values of 8 and 4 (corresponding to approximately 12 and 25 per cent. of the normal prothrombin) were given an intravenous injection of vitamin K. After 4 hours we found that the R-values had fallen to 2·5 and 2 respectively (corresponding to

FIG. 2

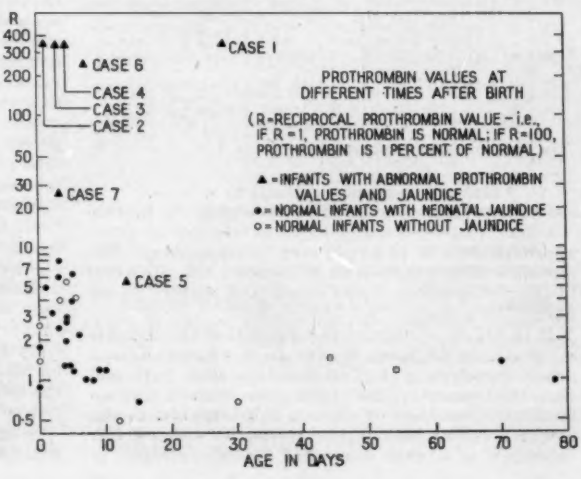


TABLE I—NORMAL INFANTS

Child No.	Sex	Age (days)	R-values	Hæmorrhages	Icterus index *	R.B.C.s (millions) Hb. (per cent.)	Diagnosis
1	F.	0	1·8	—	++		Icterus neonatorum
2	M.	0	0·9	—	10		,, ,,
3	M.	0	2·6	—			Normal
4	M.	0	1·4	—			,,
5	M.	1	5	—	+	5·00	Icterus neonatorum
6	M.	2	3·2	—	30	4·75	,, ,,
7	M.	3	6	—	40	4·51	,, ,,
8	M.	3	2·5	—	60	5·94	,, ,,
9	M.	3	4	—	—	4·77	Normal
10	F.	3	8	CH.	15	4·40	Icterus neonatorum, cephalhæmatoma
11	F.	4	1·3	—	+	4·06	Icterus neonatorum
12	M.	4	3	—	+	5·60	,, ,,
13	F.	4	2	—	15	4·37	,, ,,
14	M.	4	1·3	—	30	5·14	,, ,,
15	F.	4	2·8	—	60		,, ,,
16	M.	4	5·6	C.H.	—	5·96	Cephalhæmatoma.
17	F.	5	4	—	++	Hb. 130	Icterus neonatorum
18	F.	5	1·2	—	+	3·75	,, ,,
19	F.	5	6·4	—	+++		,, ,,
20	M.	5	4	HS.	—		Hæmorrhage in scrotum; otherwise normal
21	M.	6	2·2	—	130	5·00	Icterus neonatorum
22	M.	7	1	—	20		,, ,,
23	F.	8	1·6	—	++	Hb. 140	,, ,,
7	M.	8	1	—	30	3·65	,, ,,
24	M.	9	1·2	—	—	4·59	Normal
17	F.	10	1·2	—	+	4·75 Hb. 126	Icterus neonatorum
13	F.	12	0·5	—	—		Recovered from icterus; now normal
11	F.	15	0·7	—	+	4·46	Icterus neonatorum
25	F.	30	0·7	—	—		Normal
26	M.	44	1·5	—	—	Hb. 113	Debilitas congenita
27	M.	54	1·2	—	—	Hb. 76	Congenital pyloric stenosis
28	M.	70	1·4	—	++	4·24 Hb. 89	Hepatitis
28	M.	78	1·0	—	++		,,

* Subjective estimations indicated by + or —.
CH. = Cephalhæmatoma. HS. = Hæmorrhage into scrotum.

approximately 40 to 50 per cent. prothrombin). We also showed that there is no difference in the alteration in the prothrombin of non-icteric and slightly icteric normal infants.

It therefore seems almost certain that the decrease of prothrombin must be due to a vitamin-K lack which develops in the first few days after birth and thereafter ceases. The explanation must be that an insufficient quantity of vitamin K is supplied to the newborn child which apparently has no store of this substance or is even somewhat deficient already at birth. After birth the organism must be supplied with vitamin K. The supply depends upon the presence of the vitamin in the intestine, as well as on the absorption. The vitamin in the intestine comes partly from ingested food, the milk, and partly from bacterial processes. Milk is a poor source of vitamin K and it is unlikely that much formation of vitamin K by bacteria is taking place during the first days after birth. Conditions are therefore in favour of the development of vitamin-K lack. Inadequate absorption cannot be excluded, because sufficient knowledge about the composition and quantity of the bile secreted by the newborn organism is still lacking.

The time when the hæmorrhagic diathesis is seen coincides with the period of prothrombin reduction, and as we have observed a more pronounced reduction of prothrombin in a case of hæmatemesis, one may assume that the deficiency of prothrombin is the cause of the hæmorrhagic diathesis. The fact that the hypoprothrombinæmia could be cured by vitamin K makes it likely that a vitamin-K lack is the real cause of the hæmorrhagic diathesis.

Sanford (1939) has stated that the prothrombin of the newborn is normal or even increased in the first 4 days after birth, and that the coagulation-time is normal, but this must be due to his inappropriate methods. However, Sanford and Leslie (1938) agreed with us that the coagulation-time of infants with hæmorrhagic diathesis was delayed, but they ascribed this fact to a dysfunction of the platelets, an explanation which has not been sufficiently proven.

THE TRIAD OF ICTERUS GRAVIS NEONATORUM, ANÆMIA NEONATORUM AND HYDROPS CONGENITUS

Anæmia neonatorum is a severe anæmia, which is present at birth or when the child is a few days old. The anæmia, which sometimes is hyperchromic, is the principal feature, while icterus, enlargement of the liver and spleen, the hæmorrhagic state and an increased number of nucleated red-cells in the blood are occasionally found. The disease has been known for some time. Buchan and Comrie (1909) gave an exhaustive description of 4 cases. About 50 cases have now been described. The treatment has been blood-transfusion, liver preparations and iron. The prognosis is good and spontaneous recovery may occur.

Icterus gravis neonatorum (*familiaris*) differs from the physiological icterus neonatorum in being already present at birth or a few hours after, in increasing constantly, and in being frequently accompanied by enlargement of liver and spleen and sometimes universal hydrops. Buchan and Comrie (1909) drew attention to the simultaneous occurrence of icterus gravis neonatorum and an abnormal blood-picture with severe anæmia and a large number of nucleated red-cells; they further demonstrated an abnormal increase of blood-forming foci in the liver. The disease is often familial and has a bad prognosis.

Hydrops congenitus is a rare condition characterised by a severe universally distributed œdema. The children are often icteric and often premature. The differential count shows nucleated erythrocytes in large number and usually anæmia. The disease is as a rule lethal. Rautmann (1912) introduced the term "erythroblastosis" because in one case of the disease he found numerous erythroblasts in the liver and in the spleen and suggested that this finding had a relation to the origin of the disease.

Most authors of recent years (particularly Diamond, Blackfan and Baty (1932), Péhu and Noel (1928),

Lehndorff (1934) and de Lange (1932)) are of opinion that the three diseases—anæmia neonatorum, icterus gravis neonatorum and hydrops congenitus—are closely related to each other, and that the causative pathological process is the erythroblastosis—the presence of abnormal erythroblast foci in liver and spleen. The primary ætiological significance of the erythroblastosis is, however, not supported on a sufficient pathologico-anatomical basis, and does not at present explain why the same pathological change can give rise to three different syndromes. The reasons which suggest a mutual relation are the clinical and hæmatological resemblances, and the fact that it has repeatedly been observed that a woman has borne a child with icterus gravis and later a child with hydrops, and likewise that one and the same woman has had a child with anæmia neonatorum and one with hydrops. In one of our cases where a pair of twins suffered from anæmia gravis, the mother had previously borne two children, which were icteric and died ½ hr. and 8 days after birth. In both cases the disease was probably icterus gravis. In two of our cases the icterus gravis was accompanied by anæmia and hæmorrhagic diathesis and in one of the cases also by erythroblastosis. In our case of hydrops congenitus numerous erythroblasts were found in the blood.

Since there appears to be a support for the mutual relation of these syndromes, it is the more remarkable that all the six patients we have examined have had one new common symptom—lowered prothrombin in the blood. In two cases (Nos. 1 and 6) vitamin-K treatment was attempted. In case 1 an emulsion of 10,000 units vitamin K with 100 mg. sodium desoxycholate was given by stomach-tube, while 40,000 units were given intramuscularly in oil solution, and in case 6 4000 units were given intravenously. In the first case 20 ml. of blood had been given intravenously 2 days before without effect. Two days after the vitamin-K treatment the prothrombin level was normal. In case 6 some increase of prothrombin was found 4 hours after the intravenous ingestion of vitamin K and a considerable increase was seen 45 hours later.

It is almost certain that the prothrombin deficiency found in icterus gravis is also due to vitamin-K lack, as it is unlikely that the blood-coagulation in case 1 should have become normal in the course of 2 days, if vitamin K had not been given. (In case 1 the prothrombin level was almost zero 30 days after birth when the treatment took place).

The explanation of the vitamin-K lack demonstrated in connexion with these diseases is not so clear as it is in normal or slightly icteric infants. It has still to be seen whether a decrease of the bile acid present in the intestine during digestion may be important by causing an insufficient absorption of fat and fat-soluble vitamins. A Pettenkofer reaction carried out on the fæces was negative, but an answer to the question requires a more thorough investigation when a similar case is available. A complete obstruction of the bile-duct may be excluded because the fæces was not acholic at any time. Buchan and Comrie (1909) found in three cases, rather closely resembling our cases 1 and 2, signs of difficult passage through the bile-ducts. It could be imagined that in these cases a congenital—anatomical or functional—obstruction of the flow of bile occurred. In our case 2, where a very low prothrombin level was observed one day after birth, it is, however, likely that another mechanism has been operating than insufficient absorption from the intestine. Nor is it likely that vitamin-K lack would be due to an insufficient development of the bacterial flora in the intestine 30 days after birth. We have not yet had opportunity to finish the examination of the possibilities suggested above.

It is known from numerous investigations on vitamin-K lack in animals (chicks and rats) that K lack per se does not (in these animals) give rise to icterus. It is therefore improbable that K-lack is the cause of the whole complex of symptoms—it may be merely an accompanying phenomenon.

Our studies do not give any support for the view that treatment with vitamin K has had any influence on the course of the anæmia beyond a hæmostatic effect.

SUMMARY

1. In normal infants a moderate vitamin-K lack develops during the first few days after birth, and disappears within a week. This results in a hypoprothrombinæmia, which is the cause of the commonly seen slight hæmorrhagic diathesis in newborn. Its cause must be insufficient supply of vitamin K from the intestine.

2. In diseases belonging to the clinical triad of icterus gravis neonatorum, anæmia neonatorum and hydrops congenitus, a very considerable hypoprothrombinæmia has been demonstrated. Ingestion of vitamin K (together with bile-salt) by one of the patients resulted in a rapid increase in prothrombin; one may therefore presume that the hypothrombinæmia in this case was due to vitamin-K lack. In cases where a complete lack of prothrombin is seen one day after birth, other causes than insufficient absorption from the intestine must be operating.

Most of the normal infants were examined in the maternity department of Rigshospitalet, Copenhagen. Thanks are due to Professor Hauch and Professor Rydberg for permission to carry out the investigation. The work has been supported by a grant from the Rockefeller Foundation and from the Josiah Macy, Jr. Foundation.

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". . . . It is easy to imagine a large-brained ape, quite as intelligent as man, who was yet devoid of altruism, cruelty or superstition, who was neither brave nor cowardly, who had no neurotic fears to master or succumb to, who was, in short, inhuman. But the ape, however stupid, who buried his departed parents with an offering of nuts, or dismembered his slain opponents to prevent their resurrection, or whose conduct was in any other manner determined by delusion, would at once proclaim his affinity with man. Therefore the main difference between man and other animals is not so much his greater intelligence, but the defects peculiar to his intelligence, almost one may say his capacity for madness."—ROGER MONEY-KYRLE, in Superstition and Society, 1939.

NUTRITIONAL DEFICIENCY OF VITAMIN K IN MAN

A STUDY OF FOUR NON-JAUNDICED PATIENTS WITH DIETARY DEFICIENCY

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SEVERAL methods (Quick, Stanley-Brown, and Bancroft 1935, Warner, Brinkhous, and Smith 1938, Dam and Galvind 1938) have been developed for the estimation of the prothrombin concentration of the blood which are apparently more specific for this substance than those (Howell 1914) previously used. By these methods decreased blood-prothrombin levels which respond to administration of vitamin K with bile salts have been demonstrated (Butt, Snell, and Osterberg 1938, Brinkhous, Smith, and Warner 1938) in patients with obstructive jaundice and in those with biliary fistula. In these conditions it appears that the absence of bile from the intestinal tract may interfere with the absorption of the fat-soluble vitamin K.† Decreased prothrombin levels which do not respond to this therapy have been observed in other conditions, notably some types of parenchymatous hepatic insufficiency (Quick 1938). In newborn infants and in the hæmorrhagic disease of the newborn prolonged prothrombin-times which respond to vitamin-K therapy have been reported by Waddell and Guerry (1939).

In chicks nutritional deficiency of vitamin K causes a diminished prothrombin level and a hæmorrhagic diathesis (Dam 1935). However, so far as can be ascertained, no cases have been observed in man in which a nutritional deficiency of vitamin K may have been a factor in the production of a diminished prothrombin level. It is the purpose of this communication to report four patients with known deficiency disease of nutritional origin in whom diminished prothrombin levels were incidentally discovered. These levels returned to normal after oral vitamin-K therapy without bile salts.

CASE-RECORDS

Case 1.—A widow, aged 50, with a two-year history of syphilitic aortic insufficiency and a one-year history of tabes dorsalis, who lived alone and during the past year partook of a diet deficient in fruits and green vegetables. No antisyphilitic therapy had been given. There was no history of alcoholism. While in the hospital for observation she developed a large ecchymosis on the thigh. The tourniquet test gave a positive result, and no vitamin C was found in the blood plasma. Scurvy was diagnosed.

Case 2.—A widower, aged 55, who lived alone for nine years after the death of his wife and during this time prepared his own meals and existed on a diet deficient in fruits and green vegetables. No history of alcoholism could be elicited. Seven weeks before admission he developed large ecchymoses over both legs, and three weeks later his gums became swollen and spongy and bled on the slightest trauma. The tourniquet test was positive and no vitamin C was found in the blood plasma. There was no history of syphilis, but his blood gave a positive result when tested for this condition. Scurvy was diagnosed.

Case 3.—An unemployed baker, aged 49, who had lived alone for the past three years and prepared his own meals. He almost never ate fruits or green vegetables. There was no history of alcoholism. Three weeks before admission he developed ecchymoses over both legs and swollen spongy protruding gums which bled easily. For the past six years he was known to have tertiary syphilis and had been given intensive specific therapy. On examination the tourniquet test was positive and there was no vitamin C in his blood plasma. Scurvy was diagnosed.

Case 4.—A plasterer, aged 64, who lived apart from his family. For at least five months he had eaten irregularly and had taken a minimum of half a pint of whisky daily. After considerable exposure to sunlight six weeks before admission he developed a dermatitis of both hands and face, which progressed in severity until admission. There was no vitamin C in his blood. Pellagra with subclinical scurvy was diagnosed.

INVESTIGATION

On admission each patient was made to rest in bed, and the diet was limited to the following foods: whites of eggs, white bread, water biscuits, butter, spaghetti, rice, bacon, corn syrup, tea, coffee, and milk boiled for five minutes. This diet contained insignificant amounts of vitamin C, vitamin-B complex, and (so far as is known) vitamin K. On this regime the symptoms and signs presented by these patients on admission abated considerably. It has been noted in the past that patients with nutritional deficiency may improve on a deficient diet when resting in bed (Spies 1932, Minot 1939).

The vitamin-C content of the blood was estimated by the method of Farmer and Abt (1936). The urinary urobilinogen was quantitatively estimated by Watson's (1937) method. Prothrombin-times were observed by the method of Quick et al. (1935) with the following modification:—

Both the control plasma and the patient's plasma were diluted with prothrombin-free human plasma prepared by the Seitz technique (Lozner, Kark, and Taylor 1939).

The following dilutions were made:

100% = undiluted unknown plasma.
80% = 0·4 c.cm. unknown plasma + 0·1 c.cm. prothrombin-free plasma.
60% = 0·3 c.cm. unknown plasma + 0·2 c.cm. prothrombin-free plasma.
40% = 0·2 c.cm. unknown plasma + 0·3 c.cm. prothrombin-free plasma.
20% = 0·2 c.cm. unknown plasma + 0·8 c.cm. prothrombin-free plasma.

Prothrombin-times were then observed for each dilution.

Two sets of prothrombin determinations were made on each patient, the second three days after the first. After these the patients were each given eight capsules of vitamin K‡ without bile salts by mouth. Next day the prothrombin determinations were repeated. Eight additional capsules of vitamin K were then given to each patient daily for the next two days, and another determination of prothrombin-time was

* During the tenure of an Adrian Stokes memorial fellowship at Guy's Hospital medical school, London.

† The tenability of this hypothesis may be affected by the announcement in the *Journal of the American Chemical Society*, July, 1939, of water-soluble naphthaquinone derivatives possessing activity resembling that of vitamin K in the treatment and prevention of hæmophilia in chicks.

‡ The vitamin K used was Klotogen, 37,500 Dam units per capsule, which was furnished by the Abbott Laboratories, North Chicago, Illinois.

made. Vitamin-K therapy was then discontinued, the patients took the same diet, and prothrombin observations were made at weekly intervals for the next month.

DISCUSSION OF RESULTS

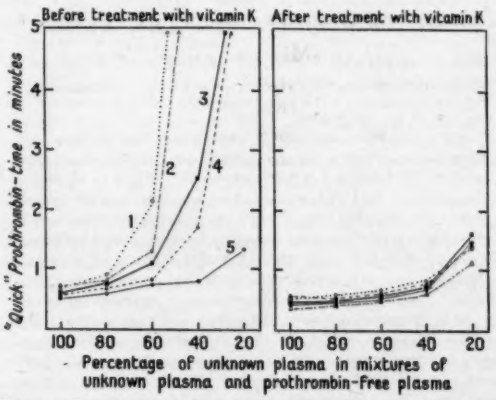
The results are summarised and graphically represented in the accompanying table and figure respectively. All 4 patients showed initially a prolonged prothrombin-time, which was particularly well brought out when the diluted plasma was used. Twenty-four hours after the start of administration of vitamin K the prothrombin-time in each case was essentially normal. During the next two days additional vitamin K was given, after which the prothrombin-times were still normal and remained so during the next month, while the patients continued to take the deficient diet without additional vitamin K.

Vitamin-C therapy was instituted in case 1 after the initial prothrombin observation. Ascorbic acid 400 c.cm. was given daily by mouth, and three days later the vitamin-C level of her plasma had risen from 0 to 0·42 mg. per 100 c.cm. At this time a second observation of the prothrombin-time was made, and this was still greatly prolonged. Cases 2 and 3 were not treated with ascorbic acid during the period of observation, and the plasma vitamin C remained at 0. From the foregoing observations it appears that no correlation exists between vitamin-C therapy, or its level in the plasma, and the prothrombin-times.

The origin of the prothrombin deficiency in these patients cannot be related to biliary obstruction, to biliary fistula, or apparently to liver disease. In each case the icteric index, blood-fibrinogen, and daily urinary urobilinogen were within normal limits.

EFFECT OF ORAL VITAMIN-K THERAPY ON THE "QUICK" PROTHROMBIN-TIME OF PATIENTS WITH NUTRITIONAL DEFICIENCY

Date	Patient	"Quick" prothrombin-times of mixtures of unknown plasma and prothrombin-free plasma (secs.)					Ascorbic acid in plasma (mg. per 100 c.cm.)	Daily urinary urobilinogen (mg.)
		Unknown plasma in mixtures						
		100 %	80 %	60 %	40 %	20 %		
May 23	Control	21	26	30	43	102	0·76	—
	Case 1	27	38	71	230	600 +	0	0·9
	„ 2	32	40	49	116	600 +	0	0·56
	„ 3	30	34	62	130	600 +	0	0·18
	„ 4	27	36	59	175	600 +	0	0·5
May 26	Control	30	35	43	47	70	—	—
	Case 1	36	55	128	600 +	600 +	0·42	3·23
	„ 2	36	45	66	167	600 +	0	trace
	„ 3	31	40	50	102	600 +	0	„
	„ 4	39	48	78	360	600 +	0	„
After above observations each patient was given eight capsules of vitamin K by mouth								
May 27	Control	25	28	32	43	89	—	—
	Case 1	27	30	41	46	84	—	1·79
	„ 2	26	29	33	46	99	0	trace
	„ 3	28	29	33	46	88	—	„
	„ 4	22	26	29	37	70	0	„
After above observations each patient was given sixteen additional capsules of vitamin K by mouth								
May 29	Control	27	29	34	38	54	—	—
	Case 1	34	35	41	47	81	1·05	0·94
	„ 2	34	38	41	44	80	0	1·26
	„ 3	34	36	44	50	83	0	0·88
	„ 4	30	32	35	37	48	—	3·36
June 26	Control	23	25	27	36	49	—	—
	Case 1	24	26	29	35	47	1·05	—
	„ 2	24	26	29	35	50	0	—
	„ 3	23	24	28	34	52	—	—
	„ 4	22	25	27	33	45	—	—



Effect of oral vitamin-K therapy on the "Quick" prothrombin-time of patients with nutritional deficiency. In the interval between the two sets of observations each patient was given eight capsules of vitamin K by mouth without bile salts. Curve 5 is from a normal control.

In 3 of the 4 patients blood tests for syphilis gave positive results. It seems advisable, therefore, to exclude this condition as a causal factor in the prolongation of the prothrombin-time. Control observations on 3 patients with tertiary syphilis, in a good nutritional state, were entirely normal.

The 4 cases reported have two outstanding features: the history of dietary deficiency with the development of scurvy in 3 and of pellagra and subclinical scurvy in 1, and evidence of a prothrombin deficiency which responded to oral vitamin-K therapy without bile salts. The suggestive evidence of the former and the objective evidence of the latter seem to point to a nutritional deficiency of vitamin K as the ætiological basis of the observed prolonged prothrombin-times. None of these patients, however, showed the extreme diminution of prothrombin which has been described in prolonged obstructive jaundice (Brinkhous, Smith, and Warner 1938, Quick 1938) and has been associated with the hæmorrhagic tendency of patients with this condition. In view of the fact that the hæmorrhagic diathesis associated with prolonged obstructive jaundice develops only when the prothrombin-time is considerably longer than in these 4 cases, it seems doubtful that the prothrombin decrease was the cause of the hæmorrhagic manifestations in these patients, for the hæmorrhages were classical scurvy and no ascorbic acid was found in the blood plasma.

These observations offer further evidence that nutritional deficiency in man is rarely, if ever, confined to a single factor.

SUMMARY

In 4 patients, each presenting a history and physical signs of dietary deficiency disease unassociated with jaundice, the prothrombin-time was found to be prolonged. The oral administration of vitamin K without bile salts was followed by a prompt return of the prothrombin-time to normal.

It appears that there may be dietary deficiency of vitamin K in man.

We thank Dr. F. H. L. Taylor for the estimations of ascorbic acid and fibrinogen in the plasma.

References at foot of next page

SOME FRACTURES OF THE SKULL

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The generally accepted theory of the production of fractures of the skull by diffuse violence is that the skull bursts under the pressure. Fig. 1, showing a decalcified but otherwise normal skull under transverse compression in a clamp, illustrates how such deformation of the skull causes a longitudinal bulging. Violence applied to a skull to the extent of causing a fissure has the same effect, which continues until the cohesion of the osseous tissue is overcome, when the skull bursts or tears outwards. Fractures arising in this manner, whether the violence is applied unilaterally or bilaterally, are seen as fissures, which continue to extend as long as the force is in action and may be prolonged over a wide surface of the skull. In this way they differ from those fractures resulting from localised violence which are often confined to the area receiving the impact. The bone is there fractured by bending inwards, and a depressed fracture results. The depressed bone may be broken into several fragments, and there may be fissure-fractures running from the depressed area at various angles and often reaching the base of the skull. It appears that, the more diffuse the violence, the more likely is the base of the skull to be involved. It is possible, however, that, owing to the presence of the numerous foramina in the base, many of these fissures begin in the base of the skull and extend up towards the vault.

FISSURE-FRACTURE OF THE OCCIPITAL BONE

It also appears that fissure-fractures tend to run in certain fairly well-defined lines. For instance, there is a typical fissure-fracture seen in the occipital bone and often confined to that bone. It tends to run as a single fissure more or less vertically down into the cerebellar fossa but may be diverted there medially into the foramen magnum, or/and laterally towards the jugular foramen; in some instances it may cross the petrous bone and end in the middle fossa. This fracture results from violence applied over the occipital bone at, or to one side of, the occipital protuberance, as indicated by the very constant presence of a contused wound of the scalp which, in my experience is usually at a lower level than the upper end of the fissure and very seldom exposes the bone beneath it. In most cases this fracture results from a fall on the back of the head. This type of fracture is of great importance, for it is constantly associated with extensive laceration of the anterior cerebral poles, causing large subdural collections of blood; and there may also be subtentorial injury, such as extradural hæmorrhage and laceration of the cerebellum, pons, or medulla. In my series of 366 undoubted fractures of the skull this type of fracture was seen at post-mortem examination 39 times; all of these patients were profoundly unconscious when admitted to hospital, and all of them died within a short interval after admission; no patient suspected to have a fracture of this type recovered.

PARIETOTEMPOROSPHENOIDAL FISSURE-FRACTURES

There is another type of fracture that is in some cases bilateral, but more often unilateral. The bilateral type courses over a wide area of the vault into, or from, the base of the skull, and runs a remarkably symmetrical course, involving very nearly the entire circumference of the skull; it has two terminal points, one on each side in the middle fossa, close to the foramen ovale, or rotundum, of each side. The violence which causes this type of fracture is applied 2–3 cm. anterior to the lambda, to judge again by the presence of hæmatomata and/or contused wounds of the scalp in that region. The fissure in the bone crosses the sagittal suture, passes below the two parietal eminences, down the temporal squamous bones, into the middle fossæ, and on to the sphenoid bone; but it may possibly begin in the base. In any case there results a bilateral parietotemporosphenoidal fissure running obliquely from a point in front of the lambda (fig. 2). This fracture is also of considerable importance, for, besides the probability of lacerating the cerebrum and causing subdural hæmorrhage, the fissure crosses, on each side, the posterior and the anterior branches of both middle meningeal arteries and may cause extradural hæmatomata from either source. Of 7 cases of this bilateral fracture which came under observation, in 3 there were bilateral extradural hæmorrhages: in 2 from the posterior branches of the artery on each side, and in 1 from the anterior branch of the artery on one side and from the posterior branch on the other. All these patients died; a post-mortem examination was made in 6 of these cases.

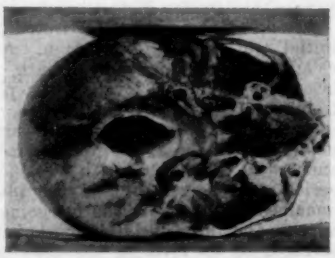

FIG. 1—A decalcified skull under transverse compression, showing elongation which would lead to bursting.

On the other hand, a unilateral fissure of a like character and associated with hæmatomata or contused wounds of the scalp just anterior to the lambda is met with. The fissure may begin over, or on either side of, the sagittal suture and may be confined to one side of the skull; or, crossing the suture, it courses down to the middle fossa of the opposite side. This type of fracture is also associated with laceration of the brain and subdural and/or extradural hæmorrhage. There were 22 fractures of this type in my series. Of these, 10 patients were operated on; 6 had extradural hæmorrhages that were evacuated, and 2 of them recovered; but the remaining 20 patients died.

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FACTORS DIRECTING THE FISSURES

Why are these fractures so constant in their course, in the one type vertically down the occipital bone and in the other obliquely downwards and forwards into the middle fossa, the violence being applied in both cases posteriorly and at points close to one another but below and above the lambda respectively?

One of the chief factors in determining the course taken by skull fractures is the arrangement of the osteogenic fibres of the individual bones, all of which now concerned, except the inferior part of the occipital, are developed in membrane in which these fibres radiate out fan-like from a centre. If one decalcifies one of these flat bones—e.g., of an infant—and tries to tear it from one margin, a comparatively straight-running tear towards the centre of ossification is easily produced; but, if one now attempts to tear the tissue at right angles to the first tear—i.e., at right angles to the run of the osteogenic fibres—it is not easy to start it, and, when it does begin, an irregular dentate tear results (fig. 3). The vertical fissures seen in the occipital bone and those of the temporal squamosphenoidal type run, on the whole, closely in the line of the osteogenic fibres, and the oblique parietotemporosphenoidal fissures run almost exactly along these lines as they pass from those of one bone into those of the other.

ELEVATED FRACTURE OF THE POSTERIOR FOSSA

There is a point in connexion with the vertical occipital fissures to which I desire to draw attention. These are, as a rule, single fissures, but it occasionally happens that, while the upper portion is a single fissure as far down the bone as the angle, open forwards, in the cerebellar fossa, which the upper vertical portion of the bone makes on the lower horizontal part, developed in cartilage, there is a tendency for the single fissure to separate into two limbs and so produce a Y-shaped fissure, one limb of which runs forwards and inwards to the foramen magnum and the other towards the jugular foramen. As the result of the flexion between the vertical and the horizontal segments of the bone, the triangular portion, or "tongue," between the two limbs of the Y is projected downwards and outwards from the skull into the suboccipital muscles, and there is thus produced an "elevated fracture of the posterior fossa of the skull" as the result of indirect violence (fig. 4). In some cases a single isolated V-shaped fracture is produced at, or about, the same site in the bone. The occurrence of these angulated fissures in practically the same area of the bone is curious. May they result from the meeting of two portions of bone having a different texture owing to the difference in the ossification process?

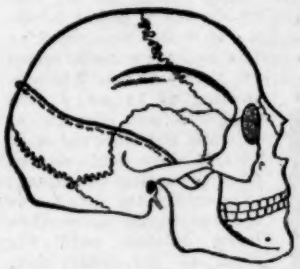


FIG. 2—Diagram of a bilateral parietotemporosphenoidal fissure passing over the vertex and both sides of the skull.

This elevated fracture of the base is of interest by reason of its being caused by indirect violence; but the violence is considerable in these injuries, and great laceration of the hind brain, followed by hæmorrhage below the tentorium, results, with early involvement of the medullary centres and death. Elevated fractures of the skull are described as occurring in the vault and from direct violence—e.g., sword cuts and hatchet wounds. Of the latter variety I saw several, but the most serious cases that came under observation were the result of heavy falling weights, from accidents in coal-pits, by which large flaps of bone still attached to the scalp were sheared off the vertical part of the skull, usually the frontoparietal region, and considerably elevated above the normal level. They were usually well ingrained with extraneous substances, and there were often large blood-clots between the bone and the underlying dura mater—extradual hæmatomata, in fact, but not causing pressure symptoms. These injuries, although they looked serious, were well recovered from, after thorough cleaning up and replacing the bone-scalp flaps. Another point is that, whereas these elevated fractures of the vault are always open fractures, those of the cerebellar fossa that came under observation at post-mortem examinations, 5 in all, were all closed fractures.

FRACTURES INVOLVING THE PETROUS BONE

Fractures involving the petrous bone constitute a serious danger to the patient because of the constant accompaniment of intracranial hæmorrhage and the possibility of sepsis, besides the liability of implication of the seventh or eighth nerve. There are four principal types of fracture of the petrous bone: three of them tend to cross it in the sagittal plane, and the fourth in the coronal.

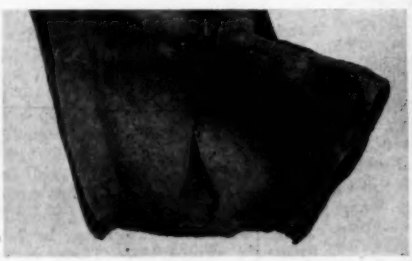
(1) Median to the internal acoustic meatus a fracture may cross the carotid canal, and in rare instances the carotid artery has been wounded. I saw several cases in which this part of the bone was fractured: in 2 there were two fissures running parallel to each other and involving the entire thickness of this segment of the bone. The bone at this part is so dense and so firmly locked in position that movement of the fractured fragments cannot take place readily, and the artery escapes in consequence.

(2) A fracture may cross the bone at any point along the internal acoustic canal and involve one or both of the nerves traversing it.

(3) A fracture may split the internal ear, passing through the semicircular canals and the vestibule (fig. 5). The membrana tympani may or may not be ruptured; in the latter case, although blood may escape by the nares and mouth, none escapes from the external auditory meatus. With this fracture it is practically certain there must be loss of hearing and paralysis of the facial nerve.

(4) The fracture of the petrous bone most often seen is that which runs more or less transversely across the floor of the middle fossa at, or close to, the petrosquamosphenoidal suture, often as a continuation of a vertical fissure down the temporal fossa (squamous bone) or as a continuation of an anteroposterior fracture along the line of the occipitomastoid suture. It involves the anterior surface of the petrous bone and, in doing so, opens up the tympanic cavity and the eustachian tube and the canal for the tensor tympani muscle; and the membrana tympani is often ruptured (fig. 6). Hæmorrhage from the ear is usually present, often followed by a flow of cerebrospinal fluid in large quantities, which may continue for days. This fracture is not uncommonly accompanied by an extradural meningeal hæmorrhage, the possibility of which must always be kept in mind where blood or cerebrospinal fluid escapes long and freely, for, owing to its escape, the pressure symptoms

which would otherwise follow the hæmatoma may not develop, the fracture and the escape of the cerebral fluid acting as a safety-valve. As long as an aural discharge continues to escape, there is always a risk of meningitis. Secondary fissures in the bone are often present, causing a comminution of the petrous bone, in consequence of which the facial nerve may be directly involved; but I do not find it noted that the eighth nerve was implicated during life in any of the instances in which I saw this fracture at post-mortem examinations. There were to my knowledge 23 patients with this fracture in my series: 4 of them had extradural meningeal hæmatomata (1 of them bilateral), 2 had free cerebrospinal discharge, and 2 had complete facial paralysis.



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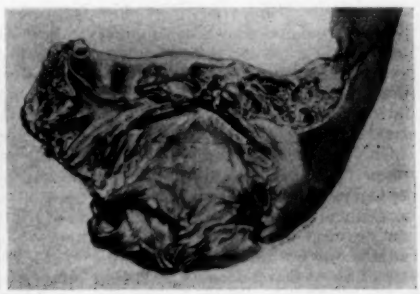

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FIG. 4—An elevated fracture in the left cerebellar fossa caused by a fall on to the back of the head.

FIG. 6—Fracture along the left petrosquamosphenoid suture. The anterior aspect of the posterior fragment is shown. The fracture has opened the external acoustic meatus, mastoid cells, tympanum, eustachian tube, and canal for the tensor tympani muscle and exposed the petrosal nerve.

Injury of the seventh nerve.—The seventh and eighth nerves may be torn across in the line of the fracture or be compressed secondarily by exudate into the bone canals through which they pass. In my series 22 patients died, and at post-mortem examination all were found to have a fracture of the petrous bone in the sagittal plane at a point where the seventh nerve might be injured. In only 3 of them, however, was it noted during life that there was interference with this nerve. In 2 of these 3 patients the paralysis was incomplete and associated with a hemiplegia due to laceration of, and hæmorrhage from, the brain; in the third it was due to direct involvement of the nerve. It must be pointed out, however, that 15 of these patients died within a few hours of admission, and it may very well have happened that complete examination was impossible. In the other 7 it is noted that there was no evidence of the seventh nerve's being implicated, yet at the post-mortem examination it was found to have been cut across in the fracture. These patients were so deeply comatose that no response of the facial muscles could be elicited, and it was equally impossible to test the function of the eighth nerve. On the other hand, among the patients who recovered 23 showed a defect in the facial muscles on one side: in 9 this was noted on admission and was complete and permanent, owing no doubt to direct injury to the nerve; in 3 others, making 12 in all, it was complete and permanent but was not observed until several days had elapsed from the date of the injury; in 8 others the defect was incomplete, its appearance being delayed until the third to the tenth day, and was recovered from—possibly in these cases being caused by compression of the nerve by exudation round it.

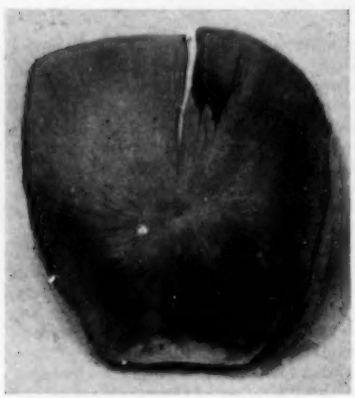

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FIG. 3—A decalcified parietal bone of an infant, showing an almost straight tear in a line with the osteogenic fibres and an irregular dentate tear at right angles to the osteogenic fibres.

FIG. 5—The medial surface of the lateral portion of a right temporal bone fractured across the labyrinth; the tympanum, from the internal aspect, with the ossicles in situ; the posterior extremity of the foot-plate of the stapes in the incomplete (fractured) fenestra vestibuli, and below it the promontory; under the latter the fenestra cochleæ. The dark oval, below and to the right, is part of the posterior wall of the internal acoustic meatus. The seventh nerve, cut by the fracture, lies between the body of the incus and the horizontal semicircular canal. The membrana tympani was not ruptured.

Injury of the eighth nerve.—Among the patients who recovered 8 had complete and permanent deafness, by aerial and bone conduction, on the injured side; 2 of them also had complete permanent facial paralysis. There were 6 patients who complained of a defect in hearing which was temporary and was recovered from: 2 of them had blood in the tympanic cavity without rupture of the membrana tympani; and 4 others had a ruptured membrane and bled freely from that ear. One patient, who died from a pneumococcal meningitis

on the twenty-third day after admission, had complained of deafness in the right ear from the time he recovered consciousness and was completely deaf by bone and aerial conduction but showed no other paralysis. He bled profusely from the right ear after admission, and this was followed by a free discharge of cerebrospinal fluid that lasted ten days. At the post-mortem examination the right eighth nerve was found to be completely divided at the outer limit of the internal acoustic meatus, but the seventh nerve, which was dissected for the entire length of the fallopian canal, was intact. In most cases of permanent deafness after fractures the lesion is probably in the internal ear; a vertical or oblique sagittal-plane fracture through the semicircular canals and vestibule is not uncommon (fig. 5).

FRACTURE OF THE LID OF THE MASTOID ANTRUM

Closely related anatomically to the fractures of the petrous bone there is a fracture that I have never seen described. It may be met with as an isolated fissure, in the sagittal plane, that follows closely the squamomastoid suture and does not in itself involve the petrous bone; but, at other times, it is seen in direct continuity with the petro-squamous fracture and, in consequence, is continued forwards into the middle fossa and, not uncommonly, is continued posteriorly along the occipitomastoid into the lambdoid suture or its neighbourhood.

The squama of the temporal bone, in the process of development, sends a prolongation downwards which forms a large portion of the lateral wall of the mastoid process; it covers in the mastoid antrum and tympanic attic, and so forms the "lid" of these cavities. The line of this suture remains evident in many adult skulls. The fracture of this outer layer of the mastoid follows the line of the suture so accurately in some instances that it might be described as a diastasis of the suture. In other cases the fissure passes down to the tip of the mastoid process or into the digastric groove and in this way shears off the entire outer wall of the mastoid process. The fracture is probably more liable to occur in the "pneumatic" type of mastoid, cellular down to its tip. The type of fracture is well seen in figs. 7 and 8, in which the mastoid antrum and tympanic attic, together with the entire lateral series of mastoid cells, are opened up besides the tympanic cavity. The membrana tympani is often ruptured in the process. The soft parts of the external acoustic meatus also may be torn across; the cartilaginous portion, sometimes, is accurately torn away from the osseous; in others, only a strip of the cartilaginous meatus may be torn off.

I met with four instances of this fracture at post-mortem examinations, but I believe it is not an altogether uncommon fracture, and that many patients recover from it. I believe that at least 11 patients were seen who had this injury and recovered. It is the type of fracture that is specially associated with retro-auricular mastoid bruising and in some instances with bruising just in front of, and above, the attachment of the auricle also and œdema of the soft parts here and of the meatal walls, which prevents, so long as it persists, an examination of the membrana tympani. This swelling of the meatal walls, moreover, can be a cause of a temporary defect in hearing, which may also result from blood effused in the tympanum or from a rupture of the drumhead. A laceration of the meatal lining may at times be continuous with a rupture of the drumhead and thus allow an escape of blood from the meatus. Deafness, as seen in my cases, was temporary, and the facial nerve was not involved in any of these patients who recovered, and there was no evidence of any implication of this nerve in the patients who died, either in life or at post-mortem examination. Pain over the mastoid was complained of by some of the patients or could be elicited by percussion, and there was a lowering of the pitch of the note obtained, which in several instances had a "cracked-pot" quality, most noticeable when percussing over the base of the process, the apical portion being held fairly steady by the muscular attachments of the cervical muscles. These conditions when present are in my opinion highly suggestive of this type of fracture. As one would expect, the tympanic and mastoid cavities tend to be filled with blood, and, since it is an open fracture with direct access for infective agents from the nasopharynx or from the external meatus, when the drumhead is ruptured there is a serious risk of infection.

In the fatal cases of this type of fracture death took place within twelve hours after admission. A post-mortem examination was made in every case, and in none was there any evidence of infection, the cause of death in each case being intracranial hæmorrhage. One might have expected to find a surgical emphysema in some of the patients, but its presence is not noted in the records of any of them. As a matter of fact,

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FIG. 7—Fracture of the "lid" of the right mastoid antrum. The medial aspect of the lateral segment of a right temporal bone is shown with a complete separation of the lateral wall of the mastoid process, in one piece, down the line of the squamomastoid suture. The cartilaginous portion of the external auditory canal has been torn away from the osseous portion.

FIG. 8—The lateral aspect of the median segment of the fracture shown in fig. 7. The "pneumatic" mastoid process has been split along the squamomastoid suture, exposing the mastoid antrum and the tympanic attic. The head of the malleus and the body of the incus are seen above the unruptured membrana tympani.

I cannot find any mention of this condition in any of my series of fractures of the skull, but, although there was no note of the escape of air into the tissues of the scalp, 2 cases of pneumocranium came under observation, and, in one of them, it was practically certain there was a petrosquamous fracture.[1] It is not a bad rule to endeavour to prevent patients with fractures involving the air cavities of the skull bones from making forced expiratory efforts, if it can be explained to them what they must not do. When capable of understanding they should be encouraged to "snift," which helps to clear the nasal passages and probably also the eustachian tube by producing a negative pressure, but not to use a handkerchief.

This fracture of the antral lid is an entirely different type of injury from the fracture of the mastoid portion of the temporal bone described by Boullet in a Paris thesis (1878). Boullet appears to have met with and described only one instance, that of a man who had been kicked by a horse. He succeeded in reproducing similar fractures by blows applied to the posterior border of the process. As I understand his paper, the patient had a comminuted open fracture in a wound of the overlying skin. The fractures of the antral lid which I saw at post-mortem examination and in all those patients in whom its presence was suspected during life were caused by indirect violence. They were open fractures only by reason of involvement of the tympanic cavity or of a wound of the meatal lining. From the internal aspect of the skull after removal of the brain the fracture is usually seen as a fissure, part of a fracture along the occipito-mastoid and squamomastoid sutures into the middle fossa. Its real character will not be seen unless looked for.

SUMMARY

(1) The line followed by fissure-fractures of the vault of the skull is to a large extent determined by the run of the osteogenic fibres of the bones developed in membrane.

(2) An elevated fracture of the base of the skull in the cerebellar fossa can be caused by indirect violence.

(3) Four principal varieties of fracture of the petrous bone are described.

(4) A fracture of the "lid" of the mastoid antrum occurs which may be part of a fracture along the occipitomastoid and squamomastoid sutures ending in the floor of the middle fossa. It results from indirect violence. The outer wall of the mastoid process is fractured in a line following closely that of the squamomastoid suture. It opens up the mastoid antrum and the tympanic attic and probably occurs more often in mastoid processes of the "pneumatic" type.

The specimens illustrated showing fractures of the temporal bone, from patients who were under my care, are now in the museum of the Royal College of Surgeons, Edinburgh. Fig. 6 was drawn by Mr. R. W. Matthews and is reproduced by courtesy of the curator.

1. Pringle, J. H., *Lancet*, 1938, **2**, 724.

OUTPATIENTS AT LONDON HOSPITALS.—The King's Fund has issued a list of 13 teaching hospitals, 30 general hospitals and 34 special hospitals in London where the majority of the outpatient clinics are now working. The fund will shortly be sending a new edition of its outpatient timetable to all doctors within 11 miles of St. Paul's. Meanwhile, any doctor who wants information about outpatients should telephone to the Emergency Bed Service.

INTRAVENOUS INJECTION OF SODIUM SALTS IN SCIATICA

BY H. B. SUTTON, M.B. Dubl.

MENDEL in 1904 was the first to demonstrate the feasibility of injecting salicylates intravenously; he treated patients with acute, subacute, and chronic rheumatism, sciatica, lumbago, and pleurisy by this method. Among the advantages which he pointed out were the avoidance of unpleasant gastric symptoms, absence of prostration and profuse sweating, and prompter and greater relief of pain. Since then other work has been done on this subject.

Adnot (1916), who treated by this method a series of patients with rheumatic fever, concluded that the intravenous injection of sodium salicylate presented the "double advantage of avoiding stomach intolerance, and that its action is more rapid and more energetic." The advantage of avoiding gastric intolerance has also been pointed out by Vasavada (1923), Karamchandani (1928), Roy (1926), Schlesser (1922), Gilbert (1921), Lutembacher (1921), Carnot and Blamoutier (1925), and Connor (1914).

Some remarkable case-records have been published. Lemierre (1932) fully described a case of Still's disease of several years' duration. He said that, when the patient was first seen by him, the movements of her shoulders, elbows, wrists, and ankles were limited and painful, and the axillary, inguinal, and epitrochlear glands considerably enlarged. The patient had been treated for a long time with large doses of salicylates by mouth without any improvement. She was then given an intravenous injection of sodium salicylate daily for seven days. The pain disappeared completely, the movements improved remarkably, the glands became smaller, and the patient gained weight. There was no relapse. Lemierre concluded that salicylates administered intravenously could apparently produce good results in cases in which salicylates given by mouth had not benefited the patient. As regards sciatica, he said: "In some cases this medication is marvellous," and that "the remedy appears to be specific rather than symptomatic."

Lutembacher (1921) also cited cases of "rheumatism" which did not respond to salicylates given by mouth but quickly improved when treated with salicylates injected intravenously.

Carnot (1925) said that the intravenous administration of sodium salicylate avoided not only gastric intolerance but also other unpleasant symptoms, such as tinnitus. As a result of investigations he concluded that salicylates injected intravenously were rapidly eliminated: 1 g. in thirteen hours; 2 g. in eighteen to twenty-four hours; and 3 g. in thirty-six to forty-eight hours. Perhaps his most important observation was that to obtain an equivalent therapeutic effect only a tenth of the dose necessary by mouth was required to be given intravenously.

Published reports lead to the conclusion that the action of salicylates injected intravenously is not identical with that of salicylates given by mouth. Cases are cited in which no effect has followed the administration of salicylates by mouth, whereas rapid improvement or cure has followed their intravenous injection. They also show that there is a great difference between the effective doses according to the method of administration.

Sodium iodide, on the other hand, in the intravenous therapy of "rheumatic" diseases has not received much attention in published reports.

Vasavada (1923) said that "in old rheumatic cases to the sodium salicylates I add 15 gr. of sodium iodide for its resolvent action. Iodine introduced in this way is much more effective, and is well tolerated." Ruggles (1931) claimed that the intravenous adminis-

tration of sodium iodide relieved the pain associated with herpes zoster.

The investigation now described, which was instigated by a report published by Porter (1925), consists of the administration of both sodium salicylate and sodium iodide in a single solution by intravenous injection in 32 cases of sciatica, of which 20 were primary and 12 secondary.

TECHNIQUE

Each injection consisted of 20 c.cm. of an aqueous solution containing sodium salicylate gr. 15 and sodium iodide gr. 15. The solution was prepared as follows :—

The sodium salts were dissolved in previously sterilised and twice distilled water, without warming. The solution was filtered through a Jena glass bowl and put up in 20 c.cm. sterile ampoules, which were quickly sealed, care being taken that the solution did not become too hot. Sterility was further ensured by heating to 70° C. for an hour on three consecutive days.

The solution is readily decomposed by heat over 80° C. and by light. For this reason the solution was protected from light, so far as possible, both during its preparation and afterwards. The ampoules were of plain (not coloured) glass, so that any subsequent decomposition of the solution would be readily detected. If decomposition sets in, the solution at first develops a pale straw colour and later a more definite yellow, due to the presence of free iodine. Natural, as opposed to synthetic, sodium salicylate was used so as to avoid impurities.

Prepared in this way the solution remains clear for three months or longer. It apparently inhibits the growth of bacteria and fungi. No growth took place in ampoules left open for six months.

The injections were made with an ordinary 20 c.cm. Record syringe, the most prominent vein at the elbow being selected. The injection must be given slowly ; otherwise there may be pain at the site of injection. All the solution injected should be injected intravenously ; any inadvertent injection into the tissues causes great pain—without, however, any subsequent sloughing.

RESULTS

In the 20 cases of primary sciatica pain ceased usually after about ten minutes. If pain returned, it usually did not do so until after eighteen hours or more. If a second injection was necessary, the result was better than that of the first injection. In the 12 cases of secondary sciatica, due to some extraneous pathological condition, pain was diminished, but not abolished, usually after about twenty minutes or longer ; the effect was usually lost after about three hours ; and a second injection tended to produce less effect than did the first. It therefore follows that, if the first injection does not cause much improvement in the sciatica, subsequent injections will not do so. Any improvement in secondary sciatica is probably due to the analgesic action of the sodium salicylate, but in primary sciatica, in all likelihood "rheumatic," the effect of the sodium salicylate appears to be specific rather than symptomatic.

COMMENTS

The series of cases treated in this way is too small to justify definite conclusions ; nevertheless, the results seem to indicate that the intravenous injection of sodium salicylate and sodium iodide is of far wider value than is generally realised. On the one hand, it can, and does, rapidly cure uncomplicated cases of sciatica ; on the other hand, its lack of effect on secondary sciatica suggests its value in diagnosis. This does not mean, however, that its use should obviate the necessity of a thorough examination in every case of sciatica.

SUMMARY

(1) Intravenous injections of sodium salicylate and sodium iodide rapidly cured 20 cases of primary sciatica but produced no permanent result in 12 cases of secondary sciatica.

(2) This selective action is probably due to the specific effect of sodium salicylate on "rheumatic" conditions, and, it is suggested, may be of diagnostic value.

My thanks are specially due to Dr. F. M. Hilliard, senior physician to the Victoria Hospital, Blackpool, and to Dr. R. E. Horsfall, assistant physician to the hospital, for allowing me to treat the cases ; to the radiological staff ; to the hospital dispenser who prepared the solutions ; and to Mr. R. Thursz, assistant surgeon to the hospital, for help in translation.

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CHANGES IN STORED BLOOD

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MUCH information has lately been gained about the therapeutic value of stored blood. This knowledge has been acquired empirically and largely at the risk of the recipient ; though no serious accidents have been reported, a better appreciation of the changes taking place during storage would, we believe, prevent the use of blood which though harmless is also probably useless. Many workers have claimed beneficial results from the use of blood which had been stored for as long as six weeks. It is important to emphasise, however, that a good colour and a clear supernatant fluid do not, as is commonly believed, by themselves indicate a useful blood.

COLLECTION AND STORAGE

As the methods of collection and storage play a part in the keeping qualities of blood, it is necessary to indicate briefly our technique. The principle of the method is similar to that described by Boland, Craig and Jacobs (1939), and now recommended in a booklet by the Medical Research Council.

The vacuum created by autoclaving a container partly filled with fluid provides suction for the withdrawal of blood. The collecting vessel is a flat 20-oz. medicine bottle fitted with a metal screw-cap which has a small hole punched in the centre, to the under surface of which a rubber diaphragm 3 mm. thick is carefully fitted. The bottle is half-filled with I.H.T. solution (Bagdassarov 1937), the screw-cap is loosely applied, and the apparatus autoclaved for 20 min. at a pressure of 20 lb. steam per sq. in. The screw-cap is firmly tightened before the bottle is removed from the autoclave and while the diluting

fluid is still boiling. When cool, the neck of the bottle is covered with a sterile viscose cap. The apparatus for the removal of the blood consists of 10 in. of rubber pressure-tubing (internal diameter 3·5 mm.) into both ends of which is fitted an adaptor to take standard wire gauge No. 16 needles with short bevels. The adaptors are useful in avoiding air leakage, which commonly prevents the collection of sufficient blood.

The donor is prepared in the accepted way for any surgical operation, a sphygmomanometer cuff is placed round the upper arm, and the pressure maintained at about 75 mm. of mercury. The viscose cap is removed from the bottle and the collecting apparatus handed to the operator. (It is convenient to sterilise the rubber tubing with its needles already attached in a bacteriological Petri dish, as this minimises handling and possible contamination.) One of the needles is then introduced into a selected vein in the forearm, while the other is plunged vertically through the rubber diaphragm of the screw-cap. By holding the collecting bottle horizontally the blood runs directly into the I.H.T. solution and shaking is unnecessary. When the bottle is full, the needle is removed and a fresh sterile viscose cap fitted. Two bottles of blood (i.e., one pint) are usually taken from each patient, the needle being removed from the first and rapidly plunged into the second bottle. The blood is then stored in a refrigerator at 2°–4° C., the containers being packed on their sides to increase the area of interface between plasma and sedimented corpuscles—a procedure which according to Fåhræus (1939) retards degenerative changes in the blood. The blood should not be shaken until needed for transfusion, and it is possible, using containers of the type described, to remove fluid for sterility tests with a syringe and fine needle. Of 40 samples of blood examined only one had to be discarded because of contamination.

Before dealing with the cellular changes in the blood, something may be said of the diluting fluid used. I.H.T. is often recommended in preference to sodium citrate because it delays longer the onset of hæmolysis. This is only partly true, for if two samples of the same blood are stored, one in I.H.T. and the other in 10 per cent. of 3·8 per cent. sodium citrate, neither may show any trace of hæmolysis even after a month. It is only when the bloods are shaken up and spun down that the citrated specimen may show more hæmolysis. A greater objection to the citrated blood is, we believe, the presence of gross agglutination of the corpuscles and inability of the cells to go into suspension except with vigorous shaking. When I.H.T. is used, hæmolysis and clumping are less, and, on shaking, the cells of the blood almost immediately go into suspension.

ERYTHROCYTES

Different samples of blood vary so greatly in resistance that it is difficult to form a precise timetable of degenerative changes. The details given here are the average for 18 samples of blood examined. It must be remembered that in the blood-I.H.T. mixtures the number of cells per c.mm. is only half that found in normal blood.

Red-cell counts :—

Initial count	2,800,000
After 2 days	2,720,000
,, 14 ,, ...	2,520,000
,, 21 ,, ...	2,280,000
,, 35 ,, ...	1,220,000

It should be noted that up to the end of the third week there may be no free hæmoglobin visible in the undisturbed supernatant fluid even though about a sixth of the erythrocytes have been destroyed. When obvious hæmolysis is present after four to six weeks of storage the total number of red cells present is commonly half that of the initial count. It follows that when transfusions are given with hæmolysed blood the total number of red cells may be little over one million per c.mm. of fluid.

Morphological changes.—Films of the blood-I.H.T. mixture were made in the usual way and stained by Leishman's method. Changes in form of some of the erythrocytes are seen even after twenty-four hours' storage. After two days, however, 2–3 per cent. of the red cells become spiked or stellate. At an earlier stage in degeneration small indentations, at first single and later multiple, are found in the otherwise clear-cut cellular outline. Later, these cells become stellate, and finally shrivel into knobbly or mulberry forms which readily burst, freeing their hæmoglobin and leaving the familiar ghostly shapes. The number of deformed red cells increases the longer the blood is kept, and morphological changes proceed more quickly than hæmolysis. After seven days, about 10 per cent. of the cells show abnormalities, and sometimes the proportion may be as much as 30 per cent. At the end of three weeks of storage, 15–30 per cent. of the cells are usually deformed. Later, when hæmolysis is obvious throughout the undisturbed supernatant fluid, only 10–15 per cent. of the erythrocytes may retain their normal contours. When blood of this age is treated with hypotonic saline the irregular cells, which have a greatly increased fragility, are destroyed, and a stained film of the deposit shows only normal forms. The irregular cells may also be removed from the blood by repeated washing in isotonic saline and centrifuging the deposit. It seems unlikely that such deformed and fragile cells can persist or maintain their function in the circulation of the recipient.

LEUCOCYTES

The decrease in number of all the white cells is much more rapid than in the case of the erythrocytes. In examining the typical count which follows, it must be borne in mind that the numbers are only half that of whole blood.

White-cell counts :—

After withdrawal	3120
,, 24 hours	1980
,, 48 ,, ...	1180
,, 7 days	600
,, 14 ,, ...	320

At the end of the first week it is impossible to find any normal polymorphonuclear leucocytes, and by the end of a fortnight the remaining white cells are all small lymphocytes.

Morphological changes.—After two days in the refrigerator many polymorphonuclear leucocytes have burst, liberating their nuclei as small basophilic granules into a distended cell-membrane. Others show condensation of the nuclear material in the lobules, which have lost their connecting bands. Many red granules appear in the cytoplasm of the neutrophils so that at first glance there seems to be a great increase in eosinophils. These granules are usually bigger but sometimes smaller than in the normal eosinophil and are probably break-down products of the cell. After about five days the nuclei of the neutrophils are fragmented, but the cell-membrane remains intact, though grossly swollen, long after the contents of the cell are disorganised. The leucocytes also rapidly lose their phagocytic properties. We were unable to demonstrate the ingestion of *Staphylococcus albus* by leucocytes from blood which had been stored longer than twenty-four hours. The small lymphocytes are the most resistant

members of the white-cell series. Degenerative changes may, however, be seen quite early, when some cells show large blue granules in the cytoplasm and small vacuoles in the nuclear protoplasm. But the characteristic feature is a complete absence of cytoplasm, and it is these lymphocytic nuclei which persist when all other white cells are destroyed. We have not been able to find either large lymphocytes or mononuclears in blood which has been kept longer than two days. The platelets also disappear fairly quickly, though a few are still seen in blood which has been kept for a week.

PERSISTENCE OF GROUPING

Elliott, Macfarlane and Vaughan (1939) noted in a small number of blood samples that the agglutinability of the erythrocytes to group sera decreased in from six to fifteen days and could be seen only microscopically. Our own observations confirm this finding, but it is by no means constant; for example, in two specimens of blood (group A) kept for a month agglutination with specific sera was prompt and plainly visible to the naked eye. On the other hand, examination of the supernatant fluid from stored blood shows that the plasma may still agglutinate cells of the appropriate groups for many weeks. In one instance the supernatant fluid from group O blood which had been kept for nine weeks was able to agglutinate group B but not group A corpuscles in a dilution of 1 in 12—i.e., a final titre of 1 in 24.

FRAGILITY

According to Bagdassarov (1937) the fragility of the erythrocytes in hypotonic saline increases from the fifth to sixth day, and spontaneous lysis is evident after the fifteenth day. In testing the fragility of stored blood it is undesirable to examine the same bottle repeatedly, as the daily shaking to remove samples in itself accelerates deterioration. It is better to transfer the blood, immediately upon withdrawal from the patient, into a number of small containers, so that a fresh specimen can be used each day. This has been our procedure. The blood in each container was tested on three successive days, and commonly, even in the early days of storage, there was a progressive increase in fragility, showing that each time the blood is shaken degeneration is aided. Taking the results of the first examination of each bottle, however, there was very little change in the resistance of the red cells to hypotonic saline until the eighth or ninth day, when there was an abrupt and definite increase of fragility. By the twelfth day there was partial lysis in 0·8 per cent. NaCl and by the eighteenth day complete lysis of all the corpuscles in each dilution of saline below 0·6 per cent. In blood which has been kept longer than a month there may be complete lysis in all but isotonic solutions.

SEDIMENTATION-RATE

Sedimentation-rate estimations were also performed on blood which had been previously undisturbed. As the blood is diluted in equal parts with I.H.T. solution the tests are not comparable to those carried out on whole blood. For clear readings it is better to watch the fall of corpuscles over twenty-four hours, as the sedimentation for one or two hours is too slow for the estimation of slight variations. With these points in mind, however, the tests have some comparative value. There was a progressive slowing of the sedimentation-rate of the red cells, and a blood which fell, for example, 28 mm. in the first twenty-four hours dropped only 8 mm. on the seventh day and 5 mm. on the twenty-first day. As there is evidence that a decrease in the sedimentation-rate of stored blood is an indication of degenerative changes in the corpuscles, we tried to inhibit this process (Fåhræus 1939) by keeping the blood at 52° C. for ten minutes. There was, however, very little change in the rate of sedimentation and always hæmolysis in the heated blood.

We have not found it possible to carry out any biochemical tests on the stored blood. The pH of the supernatant fluids, however, is on the alkaline side of neutrality, and no significant alterations during storage were noted. The initial pH of the autoclaved I.H.T. solution is about 8·0, while the pH of the supernatant fluid is commonly between 7·5 and 7·6. We have had a few estimations performed on the oxygen-carrying capacity of the blood, but there seems to be no unexpected alteration of this property in the first fortnight of storage. Spectroscopic examinations of blood samples a month old revealed only a trace of methæmoglobin.

DISCUSSION

A good deal of attention has been paid by Continental workers to the changes taking place in stored blood. Among others, Bagdassarov (1937) and Gnoiski (1938) found alterations in the blood which are in many respects similar to those described. In this country less notice has been taken of these changes, and provided the appearance of the blood is normal and the fluid sterile the transfusion is often given with confidence.

There are, it seems, two main reasons for the giving of stored blood. The first and probably the most important is to increase the number of erythrocytes and therefore the oxygen-carrying capacity of the recipient's blood. The second is to give fluid which approximates to normal human plasma. If the first is the physician's purpose, then he should remember both the decrease in the actual number of red cells in the stored blood and the fact that many of the remaining cells may have undergone definite morphological changes. The common practice of noting the rise of hæmoglobin in the recipient's blood some hours after transfusion indicates only the immediate value of the transfused corpuscles. We believe it is important to find out how long the increase of erythrocytes and hæmoglobin percentage is maintained. Where the stored blood is given for its fluid value this question does not arise, though the corpuscles may possibly provide an erythrogenic stimulus. It is probably correct to say that blood which has been kept for more than four weeks is likely to be no longer blood but a plasma dilution containing foreign protein in the form of lysed and damaged red blood-cells.

When a patient is urgently in need of additional oxygen-carrying cells, the blood ought to be given as soon as possible after removal and certainly never after three weeks of storage. Free hæmoglobin in the supernatant fluid is not an indication of commencing damage to the cells but rather a sign that every cellular constituent of the blood has already been considerably altered.

SUMMARY

In blood stored in I.H.T. solution there is not only a decrease in the actual number of, but also degenerative changes in, the remaining red blood-cells. These changes may be seen two days after withdrawal and increase slowly during storage.

All the white cells of the blood rapidly decrease in number, and at the end of a week the remaining nucleated cells are small lymphocytes.

The fragility of the stored corpuscles to hypotonic saline begins to increase from the eighth to ninth day while the sedimentation-rate of the cells gradually diminishes till by the twenty-first day of storage there is often no sedimentation.

The appearance of stored blood and particularly of the supernatant fluid is not a true index of its transfusion value.

We wish to thank Prof. John Cruickshank for suggesting the work and for his help throughout.

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UNILATERAL HEREDITARY DEAFNESS

BY ALEXANDER BROWNLIE SMITH, M.D. Glasg., F.R.C.S.E., D.P.H.

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UNILATERAL hereditary deafness does not appear to have been often described. I have found only one reference.[1] It is well known, however, that congenital defects of the labyrinth are common, and it has been estimated that half the cases of deaf-mutism are congenital. The hereditary factor in deaf-mutism is easily traced, for the patients are segregated in special institutions, whereas persons with unilateral deafness lead normal lives and are only found accidentally. Their condition occasionally brings them to the outpatient departments of our hospitals, but very rarely can the otologist obtain a history of any hereditary factor. Hence the history of the following family is of considerable interest.

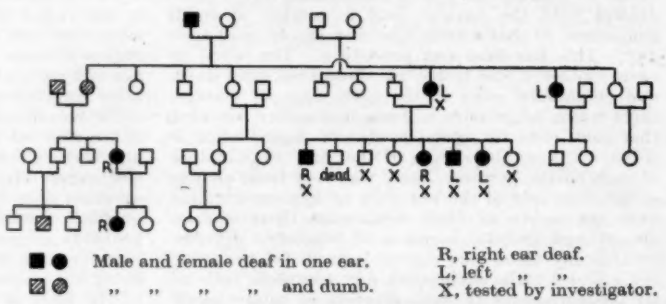
Mrs. D. brought her boy to see me with a view to operation on his tonsils and adenoids. She told me that he was stone-deaf in one ear, and that she also was stone-deaf in one ear. I discovered that three of her seven other children were similarly affected, and her father also. Mrs. D. was a woman between 50 and 60 years of age; the eldest of her family was 18 and the youngest 5.

I examined Mrs. D. and seven of her eight children. They all had normal tympanic membranes, and not one of them had ever suffered from a discharging ear. Three of the children had perfect hearing in both ears, but the mother and four of the children were stone-deaf in one ear though they had perfect hearing in the other. The mother and two of the children were stone-deaf in the left ear, while in the two other children the right ear was affected. All the deaf members of the family were stone-deaf to the voice when Bárány's noise-box was placed in the good ear, and not one of them could hear any of the tuning-forks or the monochord with the affected ear either by air- or bone-conduction. The labyrinth, tested by syringing with cold water and by rotation, reacted normally. The lesion thus appears to have been confined to the cochlear apparatus. I had radiograms taken (in Stenver's position) of the temporal bones of the mother and of five of her children; the inner ear could be clearly distinguished, but there was no apparent difference in the bony structure on either side. No history could be obtained from Mrs. D. of any specific infection, and the Wassermann reaction of one of the deaf members of the family was negative. An interesting feature, which had been observed by the mother and was fairly obvious, was that those members of the family who had features like Mrs. D. were deaf in one ear, whereas those who had features like the father had perfect hearing.

It is well known that mumps is a common cause of unilateral deafness; but, although apparently most of the children had had mumps when very young, the mother was sure that the deafness dated from birth. I could not find any evidence of consanguinity in Mrs. D.'s family. The fact that deafness affected the right ear in two of the family and the left ear in the mother and in the other two children appeared unusual. I thought that this might have been related in some way to left-handedness but on careful inquiry found that this was not so.

Mrs. D. gave me particulars of other members of the family. She had lost touch with some of them, but from what she could tell me I have prepared the accompanying genealogical table. Mrs. D. also gave me some information which led me to investigate two of her relations who, unknown to her, had attended the ear, nose, and throat department of Edinburgh Royal Infirmary. Although I was not able to examine these two relations personally, I was able to obtain their case-notes.

Mrs. D. had one other sister who was deaf in one ear, and her eldest sister had become deaf and dumb after measles. Whether the latter also had a hereditary unilateral deafness I cannot say; but her deafness was of such a degree that she had to enter an institution for the deaf and dumb. There she met her husband, who, according to Mrs. D., had lost his speech and hearing after a box on the ears and was the only deaf member of a family of ten. There were three children from this union, two boys and a girl. Both boys had perfect hearing, but the girl was deaf in one ear. She is now married and has two children, one of whom is deaf in one ear. Of the two boys who had perfect hearing, the elder married and had three children and some years ago brought his second-born to the infirmary. I was thus able to obtain particulars of both father and son. The father had perfect hearing, but the son was a deaf mute. The two other children were healthy. The Wassermann reaction was negative in both father and son. This is the only case of congenital deaf-mutism which I have been able to trace



1. Marschak, A., *Z. Laryngol.* 1931, **21**, 145.

in the family, and it is interesting that the defect has been transmitted through a healthy father.

Mrs. D.'s other sister, who was deaf in one ear, also married and had two children, both of whom had perfect hearing.

It is beyond the scope of this paper to discuss the factors of mendelian inheritance, but it is curious that a hereditary defect should be confined to one of the paired organs of hearing, and that the defect should occasionally be transmitted to the opposite side. Also, it is interesting that the only deaf mute in the family should be the grandchild of two deaf mutes and the child of a healthy father. Thus, in three generations of the descendants of Mrs. D.'s father, who was deaf in one ear, there are alive at the present time nine persons with hereditary deafness.

MEDICAL SOCIETIES

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SECTION OF SURGERY

AT a meeting of this section on Nov. 22, with Mr. V. ZACHARY COPE presiding, an address on

Treatment of War Fractures by the Closed Method

was given by Dr. JOSEP TRUETA, late director of surgery at the General Hospital of Catalunya, Barcelona. Treatment of the open fracture, he said, is not merely treatment of the bone but of the wound. The bone should be considered as organic tissue reacting similarly to other soft tissues. Treatment of open fractures had two objects: to avoid or overcome infection, and to obtain the best possible reduction of the fragments together with the consolidation of the fractured part without deformity by immobilisation. He counselled prudence in the use of sulphanilamide compounds; the dose should never exceed 6 or 7 grammes a day, and should be reduced as soon as it begins to produce beneficial effects. No measures against infection, such as antisepsis of the wound or the use of sera, is employed today without first excising all damaged tissues, especially those deprived of circulation. Contrary to opinions held during the last war, he believed that the greatest danger of infection lies not in the bone but in the muscle. The bone plays an almost passive rôle in infections, while dead muscle tissue is favourable soil for anaerobic infection and for that reason must be excised meticulously. Simple hæmatomata in the intermuscular spaces are good culture media which should be followed up systematically. Skin, on the other hand, provided it has a good blood-supply, should be preserved. A factor now seen to be of importance is the time elapsing between the production of the wound and the removal of the devitalised tissues. In the last war eight hours was considered to be the limit before infection of the wound occurred, but the limit is not exact, and Dr. Trueta has seen hundreds of cases run an aseptic course where wounded patients have been operated on after eight hours, provided they were but little contused. On the other hand, in wounds from shrapnel, and especially those produced by aerial bombs, infection takes place much earlier, even in less than four hours. When operation is undertaken immediately, secondary shock commonly does not occur, nor do generalised infections develop. If true shock is to be avoided, compound fractures with extensive wounds should be operated on within two hours; this is not often possible in military operations, but may be done in bombarded cities with hospitals close at hand.

Among procedures aimed at sterilising the wound by physical methods open treatment has been most widely followed. Braun only fixed the limb by a splint with the wound uncovered. Dr. Trueta's results with this technique have not been unfavourable, but its use in deep wounds of the limbs is limited, because retained secretions remain undrained under the slough. Only in severe trauma of the lower limb, when there is doubt about the possibility of saving the limb, is it necessary to watch the state of nutrition of the tissues for two or three days, and in such cases it is advisable to employ open treatment after immobilising the limb correctly by continuous traction and a good splint such as Thomas's or Braun's. Retention of discharge is one of the factors which favour the development of infection, especially when colonies of organisms exist in the depth of the wound. In Dr. Trueta's experience the best drainage is obtained with sterile absorbent gauze introduced into the tissue planes, sometimes counter-drainage is needed by rubber tube inserted through the plaster into the most dependent parts of the cavity.

On the subject of immobilisation, Dr. Trueta said that it is well recognised that movement increases the dissemination of infection in the body and the absorption of toxin from wounds, probably owing to interference with the local defence mechanism in the small capillaries and the lymphatic thrombi by which the wound is isolated from the general circulation. Rigorous immobilisation is certainly one of the most effective means of preventing and combating infection. This can only be obtained by enclosing the extremity under a rigid casing which will prevent even the slightest movement and yet allow a good circulation. The only material supplying these requisites is plaster-of-paris. Its disadvantage is that it prevents examination of the wound, but fortunately such examination is seldom necessary. In the upper limb, if it had been properly applied, the closed method is invariably satisfactory, and gas gangrene and septicæmia are very rare. In the lower limb the thigh and leg must be considered separately. When operating on fractures of the leg it is necessary to examine carefully both the circulation in the foot and the local circulation in the wounded part, and especially to estimate the possibility of excising all devitalised tissue. In the thigh the indications are the same, but here consideration of the local circulation in the tissues surrounding the wound is more important than the general circulation of the leg because the latter is more easy to assess. In both cases if there is doubt about the vitality of the tissues that remain one must wait two or three days, keeping the patient in bed with the wound open and the leg fixed by continuous traction. With this line of treatment it is possible to save many lives as well as limbs and to see gas gangrene progressively disappear from hospital.

The only satisfactory method of obtaining reduction of fractures is by traction. Reduction must be secured by the application of extension on the operating table. Each region has its own special technique, and this Dr. Trueta described. He went on to say that the plaster-of-paris should be put on under an anæsthetic whenever this is possible, profiting by the good reduction of the fragments which has been obtained by the continuous extension. The patient should never be moved from the operating table in order to put on

the plaster. The plaster should be put directly on the skin without stockingette, only the anterior superior iliac spine, the os calcis, and the tendo Achillis being covered by a layer of cotton-wool. The use of cotton-wool under the plaster makes the immobilisation of the soft tissues less effective. After treatment the plaster cast should be left in position as long as the smell is not excessive and the plaster had not become soft and wet. In 1073 patients treated at his clinic the removal of the plaster for a true clinical indication was necessary in only 0·75 per cent. The immediate benefits of the plaster treatment are absence of pain, rapid disappearance of shock, elimination of sleepless nights and return of appetite. Dr. Trueta is convinced that making a window in a plaster cast neutralises all the value of plaster treatment. He does not use Vaseline, which diminishes absorption. If the plaster is correctly applied directly on the skin and with the limb in its correct position, displacement of fragments does not occur. Sometimes, however, a better reduction may be obtained after ten or twelve days, when the danger of severe infection has passed, because the need for speed at the first operation has made it difficult to place the fragments in good position. This second reduction should be done under X-ray control and without urgency.

In conclusion Dr. Trueta mentioned that French surgeons have been amazed at the value of the method as evidenced by the results in the refugees who at a later stage retreated into France. The closed method of treating compound fractures has in their eyes justified itself.

Dr. A. F. D. WALL said that in 1937 when there were hostilities in the neighbourhood of Shanghai he tried out the plaster immobilisation methods with the same successful results. Not much gas gangrene was encountered, although the Yangtze delta has a heavily manured soil.

Dr. LEONARD COLEBROOK asked whether hæmolytic streptococci were present in these wounds encased in plaster. He believed that in the war of 1914–18 the hæmolytic streptococcus was a much more important enemy than the gas-gangrene organism, and that 80 or 90 per cent. of all the open wounds in the British base hospitals were in some degree infected by the streptococcus. If the hæmolytic streptococcus is not present he thought it was the general experience that the wounds would take care of themselves; otherwise cellulitis and other troubles occur, and not infrequently death from septicæmia.

Dr. C. A. R. SCHULENBURG referred to the smell caused by the saturation of the plaster with discharges from the wound. This is a matter of considerable importance from the point of view of those who have to be near the patient. Had Dr. Trueta found any local measures capable of combating the smell?

Mr. G. GORDON-TAYLOR said that what Dr. Trueta had brought forward was novel and perhaps revolutionary. But methods of surgery are open to change, and certainly the illustrations he had shown were proof of the value of his methods.—Mr. W. C. GISSANE mentioned the difficulty of holding the original reduction when changing the plaster and Lieut.-Colonel D. C. MONRO asked the weight of plaster used by a surgical team in an average day.

Dr. TRUETA, in reply, said that all types of streptococcus and staphylococcus were found in the cases at his clinic. He believed that it was the method employed which prevented widespread infection. There is a slight risk of local infection when the plaster was changed. In the absence of clinical necessity, the first plaster is retained for about six weeks. He agreed that the smell is very disagreeable. In some cases yeast from the brewery was applied on the wound and this made the smell less pronounced. On a busy day in his clinic as much as 600 or 700 lb. of plaster was used.

Mr. ZACHARY COPE described Dr. Trueta's paper as likely to revolutionise one of the most difficult problems which faced surgery, especially in war.

REVIEWS AND NOTICES OF BOOKS

Sands of Time

By JAMES PURVES-STEWART, K.C.M.G., M.D.Edin., F.R.C.P. London: Hutchinson and Co. 1939. Pp. 356. 18*s*.

AUTOBIOGRAPHY is the fashionable medical pastime, but it is a difficult art. For the qualities of good autobiography—selection, truthfulness and self-criticism—though bywords in medical teaching are extraordinarily difficult to apply to one's own life. Sir James Purves-Stewart dispenses with self-criticism and tells us that his faults and failings are well known to his friends and need not be recounted. That may be true, but some readers will think it an unhappy remark in an autobiography. There are, however, many things of interest in this book; student and hospital life in Edinburgh in the 90's, the London hospitals of the late Victorian days, medical practice in the Boer War and later Malta, Gallipoli and Salonika in, as the dust-cover calls it, the first great war. He also describes journeys to America and more recently to Russia and Germany, and, if the paths are often familiar, he looked observantly and does not hesitate to say exactly what he thinks. Sir James also has a memory for people, and house-physicians, mess-mates, well-known doctors, actors and authors crowd upon us. Some of the men he knew are brought to life with a vivid phrase or story, but others lie uncomfortably cold and dead. Thomas Hardy, for example, compels the single thought that it was difficult to believe that so reserved and gentle a man could once have written Tess of the D'Urbervilles and Jude the Obscure. The author also deals with such subjects as euthanasia and co-education and he puts his case vigorously. His views on dictatorship have been widely reported and he foresaw the certainty of the second great war. One of the best chapters tells the story of six days on Mount Athos. The twilight gloom of its monasticism is not easily forgotten and the strange frugal meals, the holy reliques and tales of men who stood penance for years bring clearly back a cool and cruel world that had yet to hear the gentle, cynical voice of Geoffrey Chaucer. One point, however, Sir James as a true but exiled Scot should remember. Scotsmen no longer like to be called pawky. It savours too much of the despised kail-yard.

War Wounds and Air-raid Casualties

Articles republished from the *British Medical Journal*. London: H. K. Lewis and Co. 1939. Pp. 258. 10*s*. 6*d*.

FOR those doctors (and there are many) who are preparing to undertake the treatment of war casualties without any previous war experience this will provide a useful outline. Each of the contributors is an authority and almost all the articles are good. Some deserve special comment. Mr. Gordon Taylor's chapter on abdominal injuries is wise, practical and

clear. In discussing amputations Mr. Max Page has passed on the valuable lessons learned through the follow-up by the Ministry of Pensions of some fifty thousand patients who suffered amputation in the last war. A study of these late results has necessitated some changes in previously accepted ideas—for instance, it appears that many Syme stumps need reamputation within ten years. Mr. Page also emphasises the importance of close coöperation between the surgeon and the maker of artificial limbs. Mr. Geoffrey Jefferson's lucid account of the difficult subject of head wounds is a pleasure to read and few would oppose his plea for the treatment of these cases at special hospitals. One of the most convincing articles is the one on war surgery in Spain by Mr. Tudor Hart, and some of the points he makes are worth noting. He says that primary suture of wounds should in general not be undertaken if the patient must be evacuated in the next few days because continuity of supervision is essential for safety. He did not use Trueta's closed plaster method, but he acknowledges that it gave excellent results. Lower limb fractures were treated on a Braun frame and skeletal traction was nearly always used.

The surgical aspect of war casualties is not the only one dealt with in this symposium, for the book concludes with articles on psychology, gas warfare, the chemistry and physics of explosions and hospital organisation. A chapter on the classification and immediate disposal of the injured would have been useful.

Hale-White's Materia Medica

(24th ed.) Revised by A. H. DOUTHWAITE, M.D., F.R.C.P., physician to Guy's Hospital. London: J. and A. Churchill. 1939. Pp. 550. 12*s*. 6*d*.

THE two years since the last edition of this work appeared have seen many advances in therapeutics. These are now incorporated and the endocrine section has been rewritten and augmented. To make space for the additions much out-of-date information about the physical properties of crude drugs has been scrapped which further adds to the practical value of this essential book.

Asthma

(2nd ed.) By FRANK COKE, F.R.C.S. With collaboration of HARRY COKE, M.R.C.S., hon. physician, Charterhouse Rheumatism Clinic, London. Bristol: John Wright and Sons. 1939. Pp. 266. 15*s*.

ASTHMA is here considered as a symptom due to a great diversity of causes, and its classification is attempted on this basis. In the main, three fundamental types are described: type 1, the allergic or protein hypersensitive; type 2, the infective; and type 3, a mixed type, with an allergic plus an infective element, usually a staphylococcic postnasal infection, including aspirin-sensitive cases. The author believes that full sensitisation to bacteria is an extremely rare cause of spontaneous asthma in man, and says that there is no clinical evidence that it occurs at all. On the other hand toxins of bacterial origin may circulate in the blood or lymph, and on reaching special organs rich in histamine they may liberate that substance in quantities relative to their content, the two most important being the bronchial muscle and skin; and the staphylococcal inhabitants of the postnasal space are the most potent source of this histamine-producing toxin. He suggests a rather laborious series of bacterial examinations from every orifice, the organisms being then subjected to pathogen-selective blood-culture methods. A differential serum sedimentation test is described, the figures being derived from the interaction of serum and a standard colloidal agent. The test is carried out with unheated serum, heated serum and serum treated with ether and certain curves are plotted, certain curves being characteristic of the three types of asthma.

The general outlines of treatment are clear and practical, and the whole work is concisely written, up to date, well printed and well indexed.

Your Baby's First Year

By MARIE CARMICHAEL STOPES, D.Sc., Ph.D., F.L.S. London: Putnam. 1939. Pp. 283. 5*s*.

THIS stimulating and sometimes provocative book is addressed to mothers of moderate means, and contains much useful advice. Dr. Stopes has no great belief in average babies—they vary, she thinks, as much as adults—so that though certain general rules of feeding may be laid down the individual infant is the best judge of his own requirements. Broadly speaking, she thinks that almost all books on infant feeding recommend a diet far below the needs of the baby. She urges the mother to breast-feed her baby, and assures her that she can do so. In those rare cases where the mother's milk proves insufficient supplementary feeding may be resorted to, but premature weaning should be avoided. Dr. Stopes thinks the best milk for young children is goat's milk, but where this is unobtainable the cow's milk should be fresh and untreated by any form of heating or preservation. She can find no excuse for pasteurised milk, and maintains that "anything which does not go honestly bad is not fit to eat." She has some wise things to say about the importance of not allowing an infant to have illnesses. After the age of seven, if he has been well fed and cared for, he ought to be able to face the usual ailments of childhood with impunity, but up till then she urges parents to go all lengths to avoid contact with infection.

Cure of Acute and Chronic Infections by Active Immunisation

By W. M. CROFTON, M.D., late lecturer in special pathology at University College, Dublin. London: John Bale Medical Publications Ltd. 1939. Pp. 112. 7*s*. 6*d*.

Dr. Crofton claims to have recovered the causal bacterium of, among other diseases, diabetes, cancer, nephritis, epilepsy, the poxes and foot-and-mouth disease. He uses autogenous vaccines—often composed of white staphylococci and/or diphtheroids isolated from the patient's urine—for the treatment and cure of these and other diseases, notably the chronic scleroses. His book contains many diatribes against orthodox bacteriology and bacteriologists.

Heart Sounds in Normal and Pathological Conditions

By OSCAR ORIAS, M.D., director of the Institute of Physiology and professor of physiology in the Faculty of Medical Sciences, Cordoba; and EDUARDO BRAUN-MENENDEZ, M.D., director of cardiological investigations in the institute. London: Humphrey Milford, Oxford University Press. 1939. Pp. 258. 15*s*.

AUSCULTATION admittedly has its limitations in investigating the heart sounds and graphic methods of analysing them help to train the ear to recognise the more subtle changes, even though the tracings themselves have but a limited value in clinical medicine. By studying the results of improved methods for reproducing heart sounds it should be possible for the clinician to educate his ear to analyse more accurately sounds of short duration repeated at fre-

quent intervals (e.g., the mitral diastolic murmur in a rapidly beating heart) and even to hear sounds with his stethoscope which were inaudible before. To this end Dr. Orias and Dr. Braun-Menendez have contributed a valuable groundwork in this monograph, which summarises the results of a long study of graphic records.

The first part of the book deals with the physical and physiological principles involved in the different methods of auscultation and phonocardiography; the second with the physiological heart sounds, including the auricular and third heart sound; and the third with the heart sounds in disease. There are many well-reproduced figures from the authors' original papers, and the translator, Mr. R. A. Gregory, has given English readers a clear and accurate text.

Clinical Diagnosis of Swellings

By C. E. CORRIGAN, M.D., F.R.C.S., lecturer on surgery, University of Manitoba; assistant surgeon and director of the outpatient department, St. Boniface Hospital. London: Baillière, Tindall and Cox. 1939. Pp. 313. 18s.

THIS is a collection of notes such as might be compiled by any senior student reading for his final examination. It contains nothing new, and some of its statements are open to question. Mr. Corrigan says that only an inflamed gall-bladder has a firm consistency, but a distended gall-bladder is always hard. A gallstone of the size depicted in fig. 87 could never be detected by palpation, even with one finger, and particularly if the gall-bladder was distended. It is not the usual experience to be able to demonstrate the cord in a meningomyelocele by simple transillumination; the injection of oxygen and radiography are generally necessary. The picture of a carcinoma of the rectum invading the sacrum is misleading, for permeation of the bone is prevented until the very latest stages by the barrier of the pelvic fascia. On the other hand, the reader can always gather what the author means; the book is entertaining reading, and the illustrations, though rather crude, unmistakably depict the points the author wants to bring out.

Hydrophthalmia or Congenital Glaucoma

Its Causes, Treatment and Outlook. By J. RINGLAND ANDERSON, M.C., M.D. Melb., F.R.C.S.E., F.R.A.C.S., D.O.M.S., ophthalmic surgeon to the Alfred Hospital, Melbourne. Cambridge: University Press. 1939. Pp. 377. 25s.

THIS is a comprehensive and authoritative treatise on congenital glaucoma, of interest alike to the pathologist, the physiologist and the surgeon. There are chapters on ætiology, differential diagnosis, embryology, pathology, pathogenesis, prognosis and treatment. The illustrations and microphotographs deserve special mention. A complete bibliography is given at the end of each chapter.

NEW INVENTIONS

AN INFUSION NEEDLE WITH BULB-TIPPED STYLET

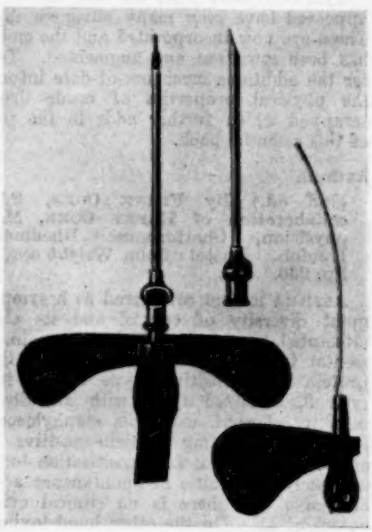
SINCE the intravenous administration of blood, glucose, saline, and other fluids by continuous drip is coming more and more into use, we have constructed a needle which makes dissection of a vein unnecessary and can be left in the vein for two days, if necessary, without piercing or damaging the opposite wall of the vessel.

The needle is stainless, polished inside, 65 mm. long, has a bore of 1·1 mm., and fits on a common Record nozzle. To the lower aspect of the nozzle are attached wings made of soft pliable metal (annealed copper). To the lowest point of the inner circumference of the nozzle a long thin stylet is fixed. The stylet must be welded into the wall of the nozzle, for if it is only soldered it is liable to break off. The stylet is 0·5 mm. in diameter, made of resilient stainless steel, and curved downwards; at its end it has a small bulb, 0·9 mm. in diameter. Stylet and bulb are polished.

When the needle is fitted on the nozzle the stylet is pushed down the lumen of the needle, and the bulb protrudes downwards over the needle point with some force. One can convince oneself, by stroking the needle point over the back of the hand, that the point has been rendered innocuous. The thin stylet occupies only a small part of the lumen of the needle.

Directions for use.—The nozzle is attached to the tubing of the fluid reservoir, and all air is expelled. The loose needle is inserted into the vein by simple puncture. As soon as blood flows from the needle, the lacing of the upper arm is relaxed, the stylet is introduced through the needle against the blood flow, the nozzle is fitted into the needle, and the wings are bent down round the arm. The skin is washed with alcohol, and the tubing and needle are fixed with adhesive plaster, care being taken to leave the skin free where the needle is inserted.

We have never seen any clot in the needle and never met with a hæmatoma. In one very restless patient we saw the needle bulge under the skin during the patient's movements, without the vein being injured. During the insertion of the needle the arm is kept low to allow the lacing to be released safely. During the infusion the arm is raised on a pillow to avoid unnecessary rise of pressure within the vein and leaking of the needle.



Dissection of the vein and insertion of a tube or cannula under direct view are reserved for those cases in which venepuncture cannot be performed. Small trocars designed for the same purpose were not satisfactory; the needle can too easily be pushed through the opposite wall of the vein. The needle here described can be more easily handled if an erect wing is added to the nozzle. The infusion needle can be obtained from Frans van Halsema, 21 Zwanestraat, Groningen, Holland.

W. J. KOLFF.

University Hospital, Groningen, Holland.

THE LANCET

LONDON: SATURDAY, DECEMBER 2, 1939

CHILDREN IN WAR-TIME—AND AFTER

WE must wait to see what lessons have been learnt from that great social experiment which emptied so many town homes into the country during the early days of the war. There is a danger that its lessons will be lost, and its results go unrecorded, unless some contemplative minds are already weighing the good with the evil which comes out of it. For this reason we welcome Prof. CHARLES MCNEIL'S articles in the *Scotsman* of Nov. 3 and 6 on child life in the war—and after. He takes as his starting point the many unpleasant things about our city homes and the children who live in them which were brought to light by the evacuation. The low standard of hygiene, the numbers of verminous children, the prevalence of dirty habits and destructive behaviour: these may have been known to the medical profession and the public-health authorities, but they must have kept very quiet about them, for they came as an unpleasant shock to many rural and suburban hosts. Let us hope that the initial disgust of these good people at the harvest of their small tooth-combs was compensated by the wit and wisdom which they heard from the mouths of the gamins, and by the healthy glow which came into their faces after a few weeks in the country.

The revelations of the evacuation scheme gave further proof of what the infantile death-rates in parts of this country have shown for some time. These are a reproach not only to our health authorities but to the whole medical profession. They should now stimulate a combined effort to improve housing, education, and medical and nursing supervision. Professor MCNEIL'S chief concern is to ask for an investigation and review of the machinery and policy which deal with the welfare of children, and to lay down some principles of reform. The family doctor going in and out of the houses ought to be the most powerful agent in reform. But the medical schools must first play their part in his training. The family doctors themselves are eager for this. The medical schools have other duties as well in training the medical staffs of health services, district nurses and health visitors to coöperate with the practitioners in the homes of the people. It is now beyond argument that to give the student an understanding of health and disease in young children is one of the most complex and difficult tasks of clinical training. Teachers of pædiatrics, absorbed as most of them are in their subject, have seemed unwilling to force their views. But the time has come for the meek to possess the earth.

To the deputation from the British Pædiatric Association that advocated the appointment of pædiatricians to assist general practitioners and public-health authorities in reception areas the Minister of Health said he doubted whether evacuation could properly be made the occasion to set up a new service not available in peace-time. There is no reason, however, why reforms in other directions should wait till the end of the war. Some administrative device should now be found to make available for the medical schools a small portion of the two million pounds spent annually by local authorities on child welfare, for there are some teaching departments in children's diseases whose total annual budget is less than the salary of one child-welfare doctor. An administrative act like this would indicate a desire to learn, a desire to coöperate and a desire to help. Pædiatrics is not a minor special subject in clinical training as is so often imagined. It comprises that whole body of knowledge of growth, health, hygiene and disease in childhood. Without it there can be no understanding of the ills which beset the minds and bodies of men and women in later life. How can a man be a family doctor without this knowledge? How can social schemes for child welfare be administered without this understanding? Here is an immediate field of fruitful coöperation between the Ministry which should foster health and those centres of research and teaching which should foster that knowledge and understanding through which health is to be attained, both during the war and after.

SURGICAL SMELLS

RECENTLY in our columns Dr. M. LICHTENSTEIN discussed [1] the use of cod-liver oil for dressing septic wounds, reaching the conclusion that the oil has a definite bactericidal power which can be enhanced by previous irradiation. His laboratory work confirms a remarkable series of clinical papers telling of the value of the oil in the local treatment of burns, ulcers, compound fractures, osteomyelitis and infected wounds. He does not mention the drawback to this treatment—namely, that it offends the nose of everyone in the ward except perhaps the patient. That is presumably because his own work has been done in the laboratory and not at the bedside. The objection was not unfamiliar to Prof. W. LÖHR in his pioneer work at the Bürgerspital in Magdeburg where the casual visitor was assailed with an odour which can hardly be described in polite terms. LÖHR admitted the drawback but regarded it as trivial compared with the material advantage to the patients; but although assiduous in his attention he did not have to live in the ward. The same drawback applies in some degree to any of the methods in which septic wounds are

1. *Lancet*, Nov. 11, 1939, p. 1023.

immobilised in a plaster case. At the Royal Society of Medicine last week Dr. TRUETA agreed with his critics that the smell of retained secretions under such conditions is very disagreeable.

Smells in wards have hitherto been regarded as danger signals and the aim has been to remove the source of the smell rather than peddle with the smell itself, but this particular smell may have come to stay and should lead us to study measures to mitigate it. Activated charcoal has the curious property of absorbing certain smells—but its range is probably not large. More might be hoped for from an application of TRILLAT'S work on aerosol sterilisation of the air, for if the smell cannot be treated at its point of origin it should be followed into the air and fought on its own ground. PULVERTAFT and his co-workers at the Westminster Hospital have shown [2] how effective aerosols may become against floating bacteria, and in this hand-to-hand combat the globules need hardly be larger than the germs. Sodium hypochlorite in the astonishing dilution of 1 in 10 million of a 1·5 per cent. solution, PULVERTAFT tells us, may kill air-borne bacteria.[3] Its action is by virtue of its nascent oxygen, the value of which is well recognised in the use of ozone to remove the smell of offensive cancers and colostomies and in the post-mortem room. At the Westminster Hospital, for instance, ozone is produced for this purpose by sparking high-tension current through quartz di-electric and use is made of it also at the Cancer Hospital.

While we must perhaps resign ourselves to the fact that for protective reasons the human nose has been made intensely sensitive to certain smells such as those of the indoles and scatoles, it is fortunate that none of the bodies with a devastating smell are very stable chemically—they have, it seems, electrically-asymmetrical molecules—and they should readily succumb to oxidising agents. Attack should not be too difficult if the odorous substance is diffused in the air as free molecules. Here there seems a useful direction for further investigation. There is good reason for an attempt to put the perception of smell on a quantitative basis; it should help us to detect any kind of unfriendly smell.

VITAMIN K

FROM being a curiosity having some obscure function connected with blood clotting in baby chicks, vitamin K has rapidly emerged as a crystalline compound or compounds whose structure is approximately known and has acquired a place in clinical medicine. This advance has followed a now almost classic course for vitamins. First comes the observation that animals on a deficient diet show some symptoms which fail to yield to therapy with any known vitamin. The existence of a new dietary factor is thus recognised, and its chemical concentration goes hand in hand with the perfection of a biological technique for testing for it. As soon as a rich concentrate has been obtained physical and chemical tests are devised, and isolation, identification and synthesis are already in sight. If the concentrate is non-toxic clinical tests can be started and humanity can begin to benefit. To this last happy stage belong the papers by DAM and his colleagues, and by KARK and LOZNER in this issue. DAM is the undisputed beginner of the story. In 1934, in the biochemical laboratory of the University of Copenhagen, he observed the occurrence of hæmorrhages in baby chicks reared on artificial diets containing vitamins A and D and the vitamin-B complex, but otherwise deficient. The symptoms resembled those of scurvy, but did not respond to treatment with vitamin C. Here, therefore seemed to be a deficiency of an unknown dietary factor.[1] In the next three years the subject was worked at in Copenhagen by DAM and his co-workers, and in the University of California by ALMQUIST.

A curative and preventive effect was first identified with cereal grains; then the curative substance was found to be fat-soluble and to be present in many other foodstuffs, including alfalfa meal (dried powdered lucerne). The name vitamin K was suggested [2] and has been retained. DAM'S colleague SCHØNHEYDER detected that the hæmorrhagic tendency was due to a prolonged clotting time,[3] associated with a lack of prothrombin in the blood.[4] A method of measuring the clotting time, as depending on the concentration of prothrombin—the so-called prothrombin time—was devised with baby chicks. Like all biological methods this was at first rough, but was perfected by the coöperation of many workers till it was rapid and accurate. For measuring vitamin-K potency an animal unit of biological response was unfortunately established; it was called the Dam unit, and its use still persists, though it will inevitably have to disappear as all such units must.

Dried alfalfa proved a suitable material from which to begin a chemical concentration of the vitamin, and both DAM and ALMQUIST set to work on it.[5] This year the chemistry of vitamin K has greatly progressed; DAM and KARRER and their colleagues have been associated in the chemical investigation, and analyses and physical measurements have been published.[6] A group working with DOISY [7] reported the isolation from alfalfa of a vitamin K_1, resembling in properties the vitamin isolated by DAM and KARRER, and a vitamin K_2 which was obtained from putrefied fish meal.

2. *Lancet*, 1939, **1**, 443, 457.
3. Observation to appear in the *Journal of Hygiene*.

1. Dam, H., *Nature*, 1934, **133**, 909; Dam and Schønheyder, F., *Biochem. J.* 1934, **28**, 1355.
2. Dam, *Nature*, 1935, **135**, 652; *Biochem. J.* 1935, **29**, 1273.
3. Schønheyder, *Nature*, 1935, **135**, 653.
4. Dam, Schønheyder, and Tage-Hansen, E., *Biochem. J.* 1936, **30**, 1075.
5. Almquist, H. J., *J. Biol. Chem.* 1936, **114**, 241; *Ibid*, **115**, 589; *Ibid*, 1937, **117**, 517; Dam and Lewis, L., *Biochem. J.* 1937, **31**, 17.
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7. McKee, R. W., Binkley, S. B., MacCorquodale, D. W., Thayer, S. A., and Doisy, E. A., *J. Amer. chem. Soc.* 1939, **61**, 1295.

ALMQUIST and KLOSE [8] have found that pure synthetic phthiocol (2-methyl-3-hydroxy-1:4-naphthoquinone) has the same antihæmorrhagic activity as vitamin K. FERNHOLZ and ANSBACHER [9] suggest that the activity of phthiocol is due to contamination with a related substance, and KUHN and co-workers [10] report similar activity in varying doses of a number of other naphthoquinone derivatives. It seems probable that, as with vitamin E, various substitutions can be made within the molecule which somewhat alter the activity without removing it altogether; the specificity within a narrow range of variation in composition is not hard and fast.

When the concentration of the active substance had reached a certain point, the door began to open to clinical and physiological investigations. A number of other workers came into the field, though DAM was throughout a pioneer. It was noticed that chicks with prolonged clotting time were also anæmic,[11] and that there was a loss of coagulability in the blood of rats with a bile fistula.[12] Last year DAM and GLAVIND [13] published in these columns a series of observations on human cases. They found that the clotting power of the blood was normal in cases of thrombopenia, aplastic anæmia and hæmophilia, but that it was impaired in 5 out of 7 cases of obstructive jaundice; when 3 of these cases were given intramuscular injections of vitamin K the clotting time became normal in a few days. Further research along these lines with dogs showed that if a biliary fistula was established the animals developed a prolonged clotting time and a tendency to spontaneous bleeding even if the diet contained vitamin K.[14] It gradually became clear that vitamin K was a fat-soluble vitamin which could not be absorbed from the intestine in the absence of bile acids, and that symptoms of deficiency might arise either from this cause or through a lack of vitamin K in the diet. The effect of giving vitamin K and bile acids by mouth in human cases of biliary fistula and obstructive jaundice to prevent postoperative bleeding was found very satisfactory.[15] A deficiency is also reported to arise in certain cases of intestinal disorder where there is insufficient normal mucous membrane for absorption.[16] A different kind of case in which prolonged clotting time due to deficiency of prothrombin is present is described by DAM, TAGE-HANSEN and PLUM on p. 1157. These are cases of jaundice, anæmia and hæmorrhagic tendency in the newly born. WADDELL and GUERRY [17] have found the clotting time to be prolonged in babies with a tendency to spontaneous hæmorrhage, and even in normal newborn babies, and that the clotting time is shortened by treatment with vitamin K. In DAM's cases the clotting time was sometimes enormously prolonged, but it usually tended to return to normal spontaneously if the child survived; one child was treated with vitamin K and bile salts with a rapid improvement.

A simple deficiency of vitamin K, due to lack of the vitamin in the diet, has not seemed at all likely to occur in normal human beings. The paper by KARK and LOZNER which we publish this week is therefore particularly interesting. It is true that the four patients described cannot be called normal, for they lived alone and provided themselves with such a scanty diet that, besides a prolonged prothrombin time, three developed scurvy and one pellagra. Jaundice was not present and therapy with vitamin K, without bile salts, sufficed to restore their clotting time to normal. These encouraging clinical results may yet be further extended.

SIR NORMAN WALKER'S RETIRAL

THE General Medical Council has had a succession of remarkable presidents, liberal-minded men, men ready for reform and, what is more, able to see that reform is carried out. Of this the names of BRODIE, PAGET, ACLAND, QUAIN, TURNER and MACALISTER are sufficient evidence. MACALISTER was president for 27 years, and for 20 of these he had at his side a devoted friend, aiding him, encouraging him and keeping him going. NORMAN WALKER thus showed himself in the first instance as a man who is capable of leading but is willing to follow. His own period of presidency has not been so long, but he is the most experienced and best qualified man for the job who ever came to the presidential chair. He may, in fact, be regarded as the embodiment of the General Medical Council, its traditions, its nature and its character. His service goes back over 30 years as direct representative for Scotland. What brought him to the council chamber was a chance contact in a railway carriage between Dr. GEORGE GIBSON and one of the sheriffs of Lanarkshire who was troubled that medicines including poisons were then being sold by the employees of doctors. Like MACALISTER he sat in the council for two years before he spoke. But after that he served on every committee of the council, and he is the only president who has carried the flag across the world to the East. On the examination committee he visited every licensing body except one. He paid an official visit to the United States in 1920 and to Canada in 1927. In India he was associated with Sir RICHARD NEEDHAM in bringing the teaching of obstetrics again up to the registrable level. His retirement from the chair does not mean his loss from the council chamber or deprive him of what has been the great interest of his life.

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11. Thayer, S. A., McKee, R. W., MacCorquodale, D. W., and Doisy, E. A., *Proc. Soc. exp. Biol.* N.Y. 1937, **37**, 417.
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ANNOTATIONS

THAT'S ENGLAND'S HEALTH—THAT WAS

Sir Arthur McNalty tells us that his report [1] was written and in the press before war was declared. It is good to have so comprehensive an account of the state of the public health in what must now be regarded as the last complete year of an epoch. Sir Arthur considers whether progress is a law of nature and an inevitable process. He seems a little doubtful about it, and puts on his opening page the sinister title of Oswald Spengler's "The Decline of the West," but he is sure that whatever else is not progress the steady improvement from decade to decade in the nation's vital statistics show at least that our health services are not ineffective. He compares mankind to Lewis Carroll's "Alice" in the grip of the Red Queen, moving faster and faster but often getting nowhere. For a generation born in a more leisured age the transition has been too abrupt, and he is sure that state medicine must pay increased attention to the prevention and treatment of nervous fatigue which is, he remarks, a social and economic as well as a medical problem. And he cannot forbear a bitter word about the perversion of modern scientific discoveries to destructive aims. But the chapter is not so closed that it should not attract the closest attention in detail; the record of the state of the public health in England and Wales in 1938 will remain a standard or measuring rule of continuing sanity if not of progress for years ahead. We should keep firmly in our minds a birth-rate which had ceased to fall (15·1 compared with 14·9 in the previous year); a crude death-rate of 11·6 compared with 12·4 in the previous year, and be it noted that only 26·5 per cent. of these deaths occurred under the age of 50; an infant mortality-rate of 53, the lowest rate ever recorded; and a sum-total of infectious disease, excluding measles, several thousands lower than in the previous year. Apart from the persistence of diphtheria as the principal killing disease among children of school age, this is a record which contains a good deal of encouragement. The rapid fall in the mortality from tuberculosis was again resumed in 1938 after a slight set-back; there was an acceleration in the rate of decline of mortality in young adults, thus allaying a fear felt by tuberculosis workers for many years. Gonorrhœa, that most refractory of all human ills, shows signs of decline with the help of the sulphonamide group of remedies. These things may only be pointers, but they mark the direction in which the stream of public-health progress was flowing before the storm began.

PRECISION OF BIOLOGICAL ASSAYS

THAT type of biological assay which is based upon a quantal or "all-or-none" response such as the death of the test-animal has received considerable attention from statisticians. Methods of dealing with graded response assays on the other hand have not been as fully investigated as they deserve, and the consideration given to them by Bliss and Marks [2] is particularly welcome. Although the assay of insulin by the cross-over rabbit test is taken throughout as an example, the methods discussed are of general application. In their first paper, statistical methods are given for increasing the precision with which dose-response curves may be determined. By computing the results derived from the use of balanced randomised experimental designs in the analysis of variance, one or more sources of potential variation can be segregated. Unbiased results may be obtained by this method, and the factors segregated can be excluded from the estimate of experimental error. By the analysis of covariance, arbitrary adjustments for such factors as the initial levels from which responses are measured may be replaced by corrections computed directly from the data at hand, and the experimental error further reduced. When doses are spaced equally on a logarithmic scale, it is easy to determine whether the response is a rectilinear function of the logarithm of the dose, and the use of orthogonal polynomial coefficients leads directly to a determination of the best-fitting line.

Their second paper extends the arguments of the first to the determination of relative potencies. Methods are described for determining the difference in response to two materials by the use of factorial coefficients, which are based on the polynomial analysis of a dose-response curve as already described for the responses to a single drug. Divergences in slope between the responses to two materials or departures from a straight line relationship between dose and response may be detected, and the internal consistency of an assay may be tested in a number of ways. These analyses may be of great help in selecting test animals for future work, and will in many cases lead to a substantial reduction in the experimental error.

It cannot be denied that some of Bliss and Marks's methods have a formidable appearance, and that full analyses of many assays might make considerable demands on an experimenter's time. However, they do represent a valuable advance in technique and accuracy; the worker intent on the greatest possible amount of information from his results will find it well worth while to study them, both when designing his tests and treating his results.

DANGERS OF GAS AND OXYGEN

FEW anæsthetists are on the look-out for trouble once the patient who has been operated on under gas and oxygen has safely left the table. But Prof. Cyril B. Courville [1] maintains that there may be a variety of remote effects due to damage to the central nervous system by insufficient oxygenation following phenomena so slight as almost to pass unnoticed. He gives details of twenty-six cases. Six of these may be discounted, for in these patients there were intercurrent disorders serious enough to account for their disabilities without incriminating the anæsthetic. The remaining twenty are highly instructive. Professor Courville clearly demonstrates the validity of what he calls "delayed asphyxial death"; in fact, sudden death due to gas and oxygen hardly ever occurs. The delayed fatalities sometimes follow only the briefest periods of obvious oxygen-lack during the administration. The damage is not ascribed to any specific toxic action of nitrous oxide but purely to cellular anoxia, and that this is the cause of the symptoms Courville proves by histological examination of the cerebral tissues concerned. He shows that the con-

1. Annual report of the Chief Medical Officer of the Ministry of Health for the year 1938. London: H.M. Stationery Office. 1939. Pp. 230. 3*s*. 6*d*.
2. Bliss, C. I., and Marks, H. P., *Quart. J. Pharm.* 1939, **12**, 82 and 182.

1. Untoward Effects of Nitrous Oxide Anæsthesia. By Cyril B. Courville, M.D., professor of neurology and psychiatry, College of Medical Evangelists, Los Angeles. Mountain View, California: Pacific Press Publishing Association. 1939. Pp. 174. $4·75.

dition is identical with that produced by experimental simple anoxia, and by carbon-monoxide poisoning. Moreover, in the brains of those who have died after nitrous-oxide anæsthesia the typical findings of excessive narcosis—destruction limited to the nerve-cells and petechial hæmorrhages—are absent. If Professor Courville has proved his case, and he is uncomfortably convincing, anæsthetists must change some of their views on gas and oxygen.

REOPENING OF KENSINGTON RED CROSS CLINIC

DURING the last war the Kensington division of the Red Cross opened a clinic, now at 15, Holland Park Gardens, W.14, for the treatment of wounded soldiers which was later transferred to the Ministry of Pensions. When the clinic was no longer needed for this purpose, the authorities of the division realising that if the work they had been doing was of value to the war pensioner it would be of no less value to the civilian, decided to carry it on for the benefit of those who, though not able to afford physical treatment from private sources, could pay a substantial amount towards the cost. The fees received from patients in fact covered four-fifths of the total cost of the clinic, the deficit being made up from the funds of the division. By keeping open until nine o'clock at night the clinic made it possible for people to receive treatment without giving up their work. Starting in 1919 with a staff of one medical officer, two masseuses and an almoner, the clinic proved so popular that when this war broke out there were four medical officers, a sister in charge, and four full-time and five part-time masseuses. The other activities of the division then made it necessary to take over the whole building for a time, and the calling up of most of the staff made it impossible for the clinic to carry on. However, it was soon decided to re-open it and for the last fortnight it has been working every day from 9 A.M. to 5 P.M. Already over fifty patients have reported for treatment and new patients are arriving at the rate of roughly twenty a week. Every patient receives the same attention and consideration as he would in a private institution, consultation and treatment times being by appointment. There are no facilities for baths at the clinic, but all other usual forms of physical treatment are available. Patients are only received on a doctor's recommendation, and must be prepared to pay a minimum of 3*s.* for each treatment. Those who can afford to pay for treatment privately are not accepted.

HEAD INJURIES

IN 1901 Kocher described four classical stages of brain compression, basing his description on clinical observations. *First*, there is the stage of accommodation where the expanding agent in the skull displaces cerebrospinal fluid from the cranial vault. The cerebral veins and capillaries are pressed upon but the systemic circulation is unaffected. Headaches and drowsiness are the chief symptoms and there is slight fullness of the retinal vessels. The treatment is expectant and the prognosis good. The *second* stage is one of early manifest symptoms when the increasing tension empties the capillaries. The anoxæmia of the bulb reflexly elicits a rise in blood-pressure and bradycardia. The drowsiness passes into delirium or excitement. The prognosis is again good with expectant treatment. In the *third* stage the manifest symptoms advance as the compressing force increases and capillary anæmia and arteriolar stasis become severe. The medullary response produces a high blood-pressure characterised by irregular fluctuations, and the pulse-rate falls considerably. Respiration is erratic and often periodic, papilloedema is present and the reflexes are abolished. Either deep coma or excitability may exist. The prognosis is grave and surgical intervention is necessary. In the *fourth* stage the bulbar centres become exhausted as the intracranial pressure increases. The blood-pressure drops and the pulse-rate quickens and becomes irregular. The pupils dilate and become fixed. Coma is invariable and steadily deepens. The prognosis is hopeless.

Following this lead, Cushing between 1901 and 1903 published a series of papers on his experimental observations on animals. He demonstrated that a progressive increase in the intracranial tension produces a progressive rise of blood-pressure, and he held that the blood-pressure tries to find a level slightly above that of the pressure exerted against the medulla. As a corollary he maintained that a high intracranial tension in man should be relieved by a decompression. Thus cerebral compression came to be regarded as an essential factor in any cerebral injury, and alterations in blood-pressure and pulse-rate were considered reliable guides to the magnitude of the intracranial tension and therefore to treatment. Although this conception may be true in certain cases, it does not apply to many more. Browder and Meyers,[1] in cases of cerebral injury, have found that the intracranial pressure rarely even remotely approaches that needed to produce an alteration in blood-pressure or pulse-rate in animals, and that the symptoms and signs thought to be indicative of Kocher's third stage often exist with an intracranial tension that is actually subnormal. They have also studied the effect of applying pressure to large defects in the skull in a number of patients. They were able to increase the intracranial pressure until it reached and even exceeded the diastolic blood-pressure without producing any clinically significant alterations in blood-pressure, pulse-rate, respiratory rate or mental state. They obtained the same results when they raised the intracranial pressure by injecting saline solution into the ventricles. Excepting the more clearly demarcated syndromes associated with sub- or extra-dural hæmorrhage, the constitutional, neurological and psychological condition of patients suffering from severe trauma to the brain cannot then be attributed to raising of the intracranial tension, and a decompression is therefore rarely required.

Weed and McKibben[2] showed that the intracranial pressure of a normal animal could be reduced by the intravenous injection of hypertonic solutions. This was enthusiastically applied by clinicians to a number of unrelated conditions, but their ardour was cooled by some untoward reactions. Browder[3] then showed that in some patients with brain injuries the intracranial pressure was reduced by this measure, as expected, but that in 60 to 90 minutes there was a secondary rise to an even higher level. In other patients the pressure rose and stayed up, and in one severely injured patient the injection was rapidly followed by death. Others have since confirmed that the effect of intravenous hypertonic solutions on the cerebrospinal-fluid pressure is unpredictable from case to case and even in the same patient at different times. Browder and Myers conclude that in cases of trauma to the brain substance vigorous therapeutic measures to reduce the intracranial pressure are not usually justified, and may even lead to catastrophe. They

1. Browder, J., and Meyers, R., *Ann. Surg.* September, 1939, p. 357.
2. Weed, L. H., and McKibben, P. S., *Amer. J. Physiol.* 1919, **48**, 512.
3. Browder, J., *Amer. J. Surg.* 1930, **6**, 1213.

advise encephalography and ventriculography to help in the diagnosis, and recommend the following treatment when surgical intervention has been decided against.

1. Moderate Fowler position to assist the free return of blood from the head. The patient should be turned on the side to allow saliva to drain out of the corner of the mouth, and should often be rolled over to avoid hypostatic pulmonary congestion.

2. Restlessness should be controlled by sedatives, especially chloral and bromides.

3. Moderate restraint may be necessary to prevent further injury, and all bony prominences must be padded.

4. The body temperature must be kept below 102° F. Tepid sponging is the most useful measure here, but if the temperature still rises cold water instilled into the colon, one or two litres at a time, can be tried.

5. The fluid balance of the body must be maintained. If the patient is not responsive, a nasal catheter should be passed, through which nourishing fluids and saline purges can be administered.

These conservative measures can be carried on indefinitely—in one case they were necessary for five weeks before the patient recovered.

PATHOLOGICAL EFFECTS OF VASOPRESSIN

OUR knowledge of the functions of the posterior pituitary is still incomplete. While recent work has plainly implicated the antidiuretic fraction in the physiological control of water metabolism, the pressor activity remains of uncertain importance; yet the two activities have never been obtained in separate fractions. The classic proofs for the endocrine function of a gland are also difficult to apply to the posterior pituitary owing to its dependence on nerve control, though the effects of overdosage of vasopressin may give some indication of the results of a pathological hyperfunction of the gland itself.

Dodds and his colleagues [1] demonstrated the production of gastric ulcers in rabbits and other animals following the injection of large quantities of vasopressin. They were able to demonstrate [2] that the action is due to the pressor effect of the extract which diminishes the visceral blood-flow and leads to the inhibition of gastric and pancreatic secretion. The ulcers are caused by the action of the acid stomach contents on the ischæmic mucosa, thus explaining the fact that they are most easily produced in the rabbit whose stomach is normally never empty. They also demonstrated [3] the production of a macrocytic anæmia in rabbits by the same means, though the cause of this is still doubtful. These findings did not at first seem of great practical importance owing to the very large doses of vasopressin required, but Idris Jones [4] has since described a case with hypochromic anæmia, hypertension, decreased glucose tolerance and achlorhydria which he suggests was an instance of posterior pituitary hyperfunction. Noble, Rinderknecht, and Williams [5] were able to demonstrate large amounts of pressor and antidiuretic activity in this patient's urine, the excretion of which ceased at the same time as the symptoms. Another important effect of vasopressin overdosage is the kidney lesions described by Byrom [6] and Liu and Noble.[7] These are of more immediate clinical interest since they are suggestive of those found in toxæmias of pregnancy. The large quantities again necessary to produce the lesions experimentally do not rule out the connexion since Byrom [8] found that œstrone or chorionic gonadotrophin will sensitise the rat to the toxic effects of vasopressin. These facts offer some explanation of the onset of the disease during pregnancy. The water-retention and hypertension found in toxæmia of pregnancy had in any case suggested to earlier authors that the disorder was caused by posterior pituitary hyperfunction and there have been claims that pressor and antidiuretic activity has been found in the blood of such patients. These claims have, however, not been supported. The latest is that of Teel and Reid [9] who find antidiuretic activity in the urine of pregnant women suffering from toxæmia. The quantitative basis of these experiments is open to objection owing to the recent demonstration [10] that blood and urine extracts are capable of augmenting the antidiuretic action of vasopressin by diminishing its rate of absorption. These facts, which have been ably summarised by Liu,[11] all point to the conclusion that the experimental effects produced by vasopressin overdosage do simulate clinical conditions.

1. Dodds, E. C., Noble, R. L., and Smith, E. R., *Lancet*, 1934, **2**, 918.
2. Cutting, W. C., Dodds, E. C., Noble, R. L., and Williams, P. C., *Proc. R. Soc. B.* 1937, **123**, 27.
3. Dodds, E. C., and Noble, R. L., *Nature*, 1935, **135**, 788.
4. Jones, E. I., *Lancet*, 1938, **1**, 11.
5. Noble, R. L., Rinderknecht, H., and Williams, P. C., *Ibid*, p. 13.
6. Byrom, F. B., *J. Path. Bact.* 1937, **45**, 1.
7. Liu, S. H., and Noble, R. L., *J. Physiol.* 1938, **93**, 13P.
8. Byrom, F. B., *Lancet*, 1938, **1**, 129.
9. Teel, H. M., and Reid, D. E., *Endocrinology*, 1939, **24**, 297.
10. Noble, R. L., Rinderknecht, H., and Williams, P. C., *J. Physiol.* 1939, **96**, 293.
11. Liu, S. H., *Chin. Med. J.* 1939, **55**, 448.
12. Jones, W. G., and Bradley-Bowron, E. W., *Ind. med. J.* October, 1939, p. 618.

A HOME-MADE TOMOSCOPE

THOUGH it is sad that yet another term has been introduced into the nomenclature of sectional radiography, yet the apparatus described by Jones and Bradley-Bowron [12] in India and made to their own specification for Rs. 50 deserves attention. In their "tomoscope" they have dispensed altogether with rotation of the tube and have adopted the original method of Vallebona, by which the patient is placed on a chair which rotates during the actual exposure. They have made use of two vertical axles (Ford front-wheel axles) set in a wooden solid base, about 16 in. apart. A chair is firmly fixed to the anterior axle. The chair seat with its back is set on two sliding bars mounted on a rotating base and there is a pin arrangement to lock the seat firmly at any desired position relative to the fixed point—the axle, which is the centre of the focal plane. On the right side of the chair base is a scale showing in centimetres points in front of or behind the focal plane, which works in conjunction with a pointer on the sliding seat, and a corresponding scale on the chair back readily permits calculations of the focal plane in relation to the chest of the patient sitting in the chair. On the rear axle is mounted a wooden frame to which the casette holder is fixed and which can be adjusted to the height of the patient. During the exposure the casette rotates in such a way that it is always parallel to the focal plane of the chair. A connecting bar from the chair base to the casette stand insures equal and simultaneous rotation of the two parts. The X-ray tube is set in front of the patient at a distance of about 4 feet and the patient is rotated so that his face is at an angle of 45° to the tube. On release of the catch the patient and the casette rotate towards the X-ray tube by means of a series of springs that are put under tension by the rotation. So neatly has the apparatus been contrived that the exposure takes

approximately ¾ to 1 second—a time which has proved satisfactory in most types of apparatus used for tomography. At 100 mA. the kVp. is about 10 volts more than for the ordinary X-ray exposure at the same distance. The merit of this machine lies in its originality of design rather than its low cost, for it is difficult to believe that such an apparatus could be manufactured commercially for Rs. 50. The tomograms published show clearly that reasonably good sections of the chest can be taken with the apparatus. That tomography has spread to India is perhaps the greatest achievement of all.

SHORT STEPS TO A LIFE TABLE

THE number of those who will survive to a given age, the probability of a person dying between one age and another, and the average length of life in a community are all clear and useful modes of expression of mortality-rates. They enable the public-health worker to make striking comparisons between the mortality experiences of different epochs and different places. Any quick but accurate method of constructing those features of a life table is therefore welcome. One such method was put forward by E. C. Snow in 1920 [1] and has been shown to give satisfactory results with more recent death-rates.[2] Another means is developed and illustrated in a recent paper by Lowell J. Reed and Margaret Merrell.[3] Using American mortality figures they have constructed equations by which the required probabilities of dying—the basic element of the life table—can be calculated directly from the known mortality-rates for different age-groups. But to ease still further the path of the medical officer they have constructed simple tables which enable him to dispense altogether with forbidding-looking equations. Knowing his death-rate at, say, the ages 20–24, he can read off the probability of survivors at age 20 dying before age 25. A second table enables him to deal similarly with death-rates for ten-yearly intervals of life, and others with the rates prevailing in infancy and the early years of childhood. The authors wisely give a completely worked example, based upon the mortality of white males in Connecticut in 1929–31, which those whose arithmetical equipment is stronger than their algebraical should have no difficulty in following. Comparison of the results given by this short method with those derived by the complete but long process gives an excellent agreement. A similar comparison based upon English mortality-rates would be of interest and an instructive task for those who are moved to adopt this method for the construction of life tables for the area in which they work.

HOUSING POLICY

No single social problem has occupied the public mind so extensively and so continuously during the last twenty years as housing has done. After the end of the last great war public opinion became aware that the conditions under which the working classes were, in the main, compelled to live were intolerably bad. By degrees this state of affairs came to be recognised not only as a danger to health and to security but also as a matter affecting the public conscience. It is a rather pitiful coincidence that the publication of a conspectus [4] of the housing effort of eight European countries, the United States of America and Canada should synchronise with the outbreak of a new European war. This study, the largest individual section of which is devoted to the United Kingdom, is admirably compiled by Mr. M. B. Helger, of the Swedish Social Board. Although highly condensed the matter is clear and such statistics as are given are set out in a readable way. In an introductory chapter Mr. Helger deals with the development of the housing problem, the shortage of housing, questions connected with standards of housing and housing finance; the sections which follow deal with each country individually. All the familiar factors and difficulties are discussed and there is much useful information on slum clearance, overcrowding, house-building private and municipal, rates of interest, cost of construction and rent restriction. In the chapter on the United Kingdom the sequence of acts of Parliament is brought under review and the varying provisions of each in relation to subsidy, powers of local authorities, compensation, compulsory purchase and clearance are described in a way which is of value for reference. Comparison of individual countries shows many factors of the problem to be common to all—e.g., the number of households increasing more rapidly than the populations, the failure of policy based on hopes of "filtering up," reluctance of families to leave slum conditions even when better accommodation is available within their means, and the fundamental difficulty of providing housing of a proper standard at a rent adapted to the income of the average workman. Rural housing has a section to itself in each chapter. It emerges clearly that cheap money is one of the conditions essential to a successful working-class housing policy; even in times of cheap money both public ownership and some degree of subsidisation will continue to be necessary unless some way can be devised to secure that the houses can be usefully placed where site value is reasonably low.

WATCH YOUR PRESCRIBING

AFTER three months of war it is not surprising that some of the commonly prescribed drugs have become scarce. Among these are ergot of rye and belladonna root, and it is difficult to see how the shortage of these can be relieved. Poland is no longer an available source of ergot, Russia is conserving her production for her own use, and Spain seems to have no stocks for export. The only other producing country of any importance is Portugal and there this year's crop was a failure and little remains over from the previous seasons. The consequence is that the price of ergot in the London market is four times the already high figure quoted at the outbreak of war and about eight times what was regarded as normal in quite recent years. Belladonna root has almost disappeared from the drug market for the time being; the chief source of supply was those parts of Central Europe which are under German influence. Stocks of most vegetable drugs are low and the cost of some of them is extremely high, but in few cases has the stage been reached at which it is desirable to prescribe substitutes. Among synthetic products phenazone, barbitone and phenobarbitone should be used as sparingly as possible, since supplies are quite inadequate to satisfy the pre-war demand.

Sir JAMES WALTON will deliver the Bradshaw lecture to the Royal College of Surgeons of England on Thursday, Dec. 14, at 3.30 P.M. He will speak on the surgery of the common bile-duct.

We deeply regret to record the death on Nov. 25 of Mr. WILFRED TROTTER, F.R.S., surgeon and philosopher.

1. The Registrar-General's Decennial Supplement, England and Wales, 1931. Part I.
2. *Lancet*, 1939, **1**, 225.
3. Reed, L. J., and Merrell, M., *Amer. J. Hyg.* Sept. 1939, p. 33.
4. Urban and Rural Housing. Economic Intelligence Service, League of Nations. London: Allen and Unwin. Pp. 159. 3s. 6d.

SPECIAL ARTICLES

GENERAL MEDICAL COUNCIL

PRESIDENTIAL ADDRESS

Sir NORMAN WALKER, giving his last presidential address to the General Medical Council on Tuesday morning, remarked that there were only four survivors—Sir Arthur Newsholme, Prof. William Russell, Dr. Kidd and himself—of those present at the council meeting twenty-five years ago when the country last found itself in a state of war, and quoted Sir Donald MacAlister then saying: "New history is in the making, day by day, for the British Empire and for the world. The council is called upon to take an active part in meeting the national emergencies that have arisen, and will arise, in connexion with the civil and military medical services of the country." He went on to refer to the death of Sir Francis Acland, chairman of the Dental Board from its establishment in 1921 until last May. To the work of the Board, as to everything he undertook, he gave himself whole-heartedly. He welcomed Mr. Sheridan as his successor. In the death of Dr. A. P. Beddard the Pharmacopœia Commission had suffered the loss of the chairman who inspired and directed its work. Since the council met in May it had said farewell with great regret to Sir George Newman, a member for twenty years, and for seventeen of them treasurer. His experience, gathered in a long career of brilliant work for the State, and the native wisdom of his advice, had been invaluable to the council and to himself. Succeeding him as Crown nominee Dr. J. H. Burn, professor of pharmacology in the University of Oxford, brought to the council expert knowledge which would specially assist in relation to the British Pharmacopœia. As additional members for dental business the Privy Council had appointed Prof. Gilmour, returning after an absence of fifteen years, and Mr. Cubie, with long experience as a teacher of dentistry in Glasgow.

REQUIREMENTS FOR QUALIFICATION

We realise, the President continued, that the importance of maintaining due provision for study, and proper requirements for qualification, is enhanced rather than diminished in time of war. The numerous and difficult questions which are bound to arise in relation to the position of medical students are in the capable hands of the licensing bodies and of the principals and vice-chancellors, who include three of our members, and arrangements have been made whereby the confusion, caused twenty-five years ago by the rush of students at all stages of the curriculum to enlist, will not recur. Those who have passed their examination in the preliminary sciences, and have had two terms of anatomy and physiology, are regarded as being in a reserved occupation, and will continue their studies. We look with confidence to the medical schools and corporations to aid us to maintain, even in the present emergency, the standards of teaching and testing which we regard as essential to efficiency.

The problems which arose in the last war, he added, were not dissimilar. Communications were then received from several professional authorities inquiring as to the propriety of modifying or suspending some of the existing regulations in the case of students whose regular course of study for a medical qualification might be interrupted by reason of military service. The reply of the executive committee was to this effect:

. . . It is the statutory duty of the General Medical Council to secure the maintenance of such a standard of proficiency as shall sufficiently guarantee the possession by candidates of the knowledge and skill requisite for the efficient practice of their profession. To this end the council has formulated, for the guidance of the licensing bodies, a series of recommendations representing in general terms the *minimum* curriculum which, in the council's opinion, should be required by the licensing bodies. . . . Cases may arise in which, during the present national emergency, the bodies deem it expedient to modify or suspend the application of their regulations to particular candidates; but the council expects that all such cases shall be duly recorded and reported to the council in the usual way.

. . . The council feels sure that . . . the bodies concerned will recognise the importance, in the public interest, of maintaining unimpaired the present standard of knowledge and skill required of all who seek to be admitted to the status and privileges of registered practitioners; and will accordingly agree with the council that it is desirable to secure, in every instance, that the requirements of the *minimum* curriculum are substantially fulfilled.

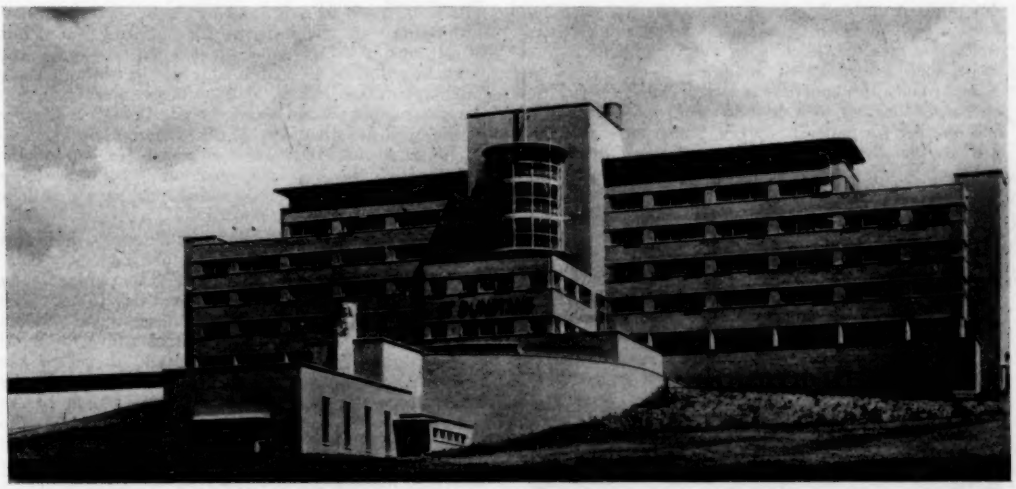
DIFFICULTIES IN AUSTRALIA

The President recalled that in two previous addresses he had found it necessary to refer to certain difficulties and misunderstandings which had arisen in two of the States of the Australian Commonwealth regarding the interpretation of certain sections of Part II of the Medical Act of 1886. The outbreak of war, he added, makes it inexpedient to continue their discussion now. We have all noted that in order to supplement the existing arrangements for collaboration between the governments of the British Commonwealth, His Majesty's Government have invited the governments in the Dominions to send a cabinet minister to London to confer with ministers here and with each other. I have long felt that a similar conference, between representatives of the medical boards or councils within those Dominions with which we are linked up through the application of Part II of the Act of 1886 and representatives of this council, would materially help to clear up misunderstandings which undoubtedly exist. But in the meanwhile I suggest that we should all put these difficulties into cold storage. We have never had any doubt as to the adequacy of the degrees conferred by such universities as Sydney and Melbourne, and for various periods extending over nearly half a century their graduates who desired it have been placed without question on our register, and endowed with all the privileges that registration carries. In return we hope that the States of Victoria and New South Wales will take the necessary steps to stay their administrative hands, and will accept the invitation to attend, when the emergency is over, the conference I have proposed.

ENVOI

The first item in the council's business will be for me to resign from the chair, and for the council to elect one of their number in my place. Last Friday it was eight years since the council were pleased to confer upon me the highest honour which is in their power to give; and three years since they were pleased to re-elect me for the period terminating at the end of the session. These eight years have been made very happy by the willing coöperation of members, past and present, and I pass from the chair with heartfelt gratitude to them all.

When Sir Norman Walker sat down a vote of thanks was proposed to him by Sir Kaye le Fleming, seconded by Prof. J. S. B. Stopford. Mr. H. L. Eason was then elected president in his place.



The front elevation of the hospital showing the chapel in the foreground surmounted by a winged victory holding the blazing torch of St. Dunstan's. Behind is the camp bounding the parking ground, the roof of the main entrance being just visible. The large projecting bays on the 2nd, 3rd, 4th and 5th floors form the western ends of the central corridors and admit a large amount of light and air.

ST. DUNSTAN'S WAR HOSPITAL

A YEAR ago St. Dunstan's completed a new convalescent home on the South Downs near Rottingdean. The home has now been converted into a war hospital for eye casualties in the Navy, Army, Air Force, Fire Brigade, and Police, and can accommodate nearly 200 patients. Its commandant is Mr. R. C. Davenport, F.R.C.S., one of the surgeons to Moorfields, and, with its own staff supplemented by Moorfields nurses, it forms a complete specialised hospital unit.

The hospital is ideally situated, perched high above and within 200 yards of the main coastal road that runs between Brighton and Rottingdean, whence it is approached by a long and rather steep drive. The lay-out is designed to provide the greatest possible amount of light and fresh air, and anyone approaching the hospital is immediately struck by the huge amount of window space. The uninitiated might ask what is the point of so much light in a building intended for blind people; but the beneficial effects of light and fresh air are as important for the blind as the sighted, and blind people often retain some consciousness of light, in which case the more light the better. Further, so long as St. Dunstan's remains a war hospital, there will be many casualties who will not be blind.

The hospital faces west and is completely isolated, there being no building within half a mile of it. It has an extensive and uninterrupted view over the English Channel and is entirely surrounded by grass and arable land. It is composed of six stories and resembles an aeroplane in shape. The nose and fuselage are represented by a projecting block containing the main entrance hall, and above that are long corridors between the wards, which run at right angles on succeeding floors and form the wings of the plane. Behind the wards is a second projecting block, which represents the body and tail of the plane. This part is occupied by the quarters for orderlies, maids, nurses, and senior staff on successive floors, and on the top floor are the kitchens.

THE INTERNAL PLAN

In more detail, the ground floor is occupied by a large entrance hall flanked by cloak-rooms and lavatories and with lifts facing the entrance. Outside the entrance and on the same level there is a large open space for parking cars. The first or main floor is occupied by administrative offices, which face the sea; behind them a wide hall leads to the serving-room, and so on. At right angles to the hall are a large lounge and dining-room and rooms for instruction in braille and typing. These latter rooms open on each side on to a wide terrace with a roof but otherwise open to the air, where the men can get exercise without leaving the home. On this floor, too, are rooms for medical and surgical examination and treatment, with a small temporary operating-theatre. Leading off the north side of one of the terraces has been placed the new operating-block provided by Lord Nuffield.

The central part of the second, third, and fourth stories is given up to wards. The second and third floors each contain two wards of 21 beds, one on each side of a central corridor. On the fourth floor the accommodation is partly broken up into small wards of 2 or 4 beds, which can be used, if necessary, for officers. There are therefore 126 beds on these three floors. On the fifth floor are rooms for instruction in trades. The sixth floor is now used as a winter garden but can be converted into two wards, each holding 21 more beds; and, if to this number are added 4 beds in a small sick bay on the second floor (which was provided for the convalescent home) and the extra beds that could be placed in the big wards, there is a total of nearly 200.

One ward of 21 beds is kept ready for immediate occupation by casualties. The other beds are largely occupied by St. Dunstan's pensioners, of whom about 80 are in residence. These men could all be evacuated if the pressure on beds for war casualties became urgent, and preparations for such an emergency have been made. If the hospital became filled with war casualties a far larger surgical outfit would be neces-

sary, and Lord Nuffield has given £7000 to pay for the new operating-block which has been added to the building. This is on the main floor and will be in full working order, supplied with every surgical requirement, such as anæsthetic room, sterilising room, and X-ray rooms, in about two weeks. There are two new operating-theatres, one planned for ophthalmic work and another for general surgery. Experience in the last war showed that a great deal of surgery other than ophthalmic was needed for many blinded men. When this block is opened, the present theatre and adjoining rooms will be used as a dispensary and outpatients' room, together with a room for minor surgical treatment.

Arrangements for the comfort of patients in the wards are admirable. Generous space is allowed for each patient. There is a spacious locker for the patients' belongings on one side of each bed and a large

Sasha.

The main approach to the hospital showing the large parking ground and the chapel below. The actual entrance is hidden by the projection of the main building.

"compactum" for clothes on the other. Above each bed is a grid which admits warm air, and each bed is provided with wireless ear-phones. At one side of the bed is a rug securely fastened to the floor. Nearly half the wall space is occupied on both sides by windows which can be opened at will. No occupied ward is left unattended, and the orderly on duty is provided with a room at the end of the ward, where he sleeps at night. When the beds are occupied by war casualties there will be nurses in constant attendance, and the orderly's room will probably be occupied by a sister.

From the point of view of a convalescent home for the blind, the visitor will be impressed by the ingenuity and care that has been bestowed on the safety, convenience and comfort of the blinded inmates. For instance, in the entrance hall is an embossed model of the hospital and its interior accommodation, sufficiently large and detailed to enable the blind man, by running his fingers over the various parts and aided by simple instructions, to form an idea of how things are planned and where things are. All the floors are modelled on exactly the same plan, so that having once mastered the geography of one floor, he is master of the whole. Everything is arranged on the "keep to the right" principle. Handrails guide him along corridors to doorways and staircases. When a door is reached, he opens it by a long handle let into the door. He cannot get knocked by the door after he has opened it because its return swing is carefully retarded, nor can he bump into the sharp edge of the door or get his fingers jammed, because the two halves of the door are lined by rubber "Dunlopillo" cushioning. On the staircase the handrail guides him to self-closing swing gates which open both ways and warn him that he is on the edge of the stairs. These gates are in two halves, acting independently, so that the man cannot collide or interfere with anybody going in the opposite direction. Still grasping the handrail on his right he arrives at the bottom or top of the staircase, as the case may be, and then, projecting from the rail, he finds studs which tell him which floor he has reached.

The dining-hall and lounges where the men congregate and meet their friends are extremely comfortable. Here come the "Good Companions," an organisation of ladies who come each day to take men out for walks and help to amuse them. When summer comes there will be a tunnel under the main road to take the men to the cliff and thence to the beach without any danger of being run over. In the winter there are entertainments every evening in the lounge or the winter garden. In front of the building, on a lower plane than the entrance hall, is the chapel, where regular services are held. Roman Catholics use the small chapel on the fifth floor.

Precautions have been taken regarding fire and air-raids. There is a second relief staircase opening on to each floor, and on the landings are stirrup pumps and buckets of water and sand. When the hospital's siren sounds, everybody will take refuge in a heavily protected shelter in the basement, fitted with lavatories and other accessories in case of a prolonged stay.

A YEAR OF MENTAL HEALTH

THE report of the Board of Control for 1938[1] records that the position in the mental hospitals at the beginning of 1939 was better than the board had feared. The total number of patients on the civil registers was 133,596. Accommodation was increased by 2259 beds and the aggregate overcrowding was reduced by 600 to 2993. The death-rate fell from 7 per cent. to 6·47 per cent. and an increase in direct admissions of 545 was more than counterbalanced by an increase of 1628 in the discharges and departures. On the other hand, an aggregate deficiency of nearly 3000 beds is serious and the diversion of building labour to defence purposes has delayed new construction. If the death-rate remains at its present low level, overcrowding is likely to increase again during the next three years, and there is no immediate prospect of any substantial increase in bed accommodation. For the second year in succession the discharges and deaths from the L.C.C. mental hospitals exceed the admissions. While this is probably the result of efforts to secure earlier treatment, the figures do not represent recoveries only, since a number of voluntary patients have discharged themselves unrecovered.

As the result of a questionnaire on treatment by insulin, Cardiazol and Triazol, the board find that these have been used at 92 institutions. Of 3531 completed cases 81·4 per cent. received cardiazol, 13·5 per cent. insulin, and 5·1 per cent. the combined treatment. Remissions occurred in 30·9 per cent. sufficient to enable them to leave hospital after treatment; 19 per cent. improved but not enough to leave hospital. Until

1. The twenty-fifth annual report of the Board of Control for the year 1938. Part I. 1939. H.M. Stationery Office, York House, Kingsway, W.C.2. Pp. 80. 1s. 6d.

better methods are available, the board consider the present methods justified. The figures for triazol cover 92 cases only; the results are broadly analogous to those of cardiazol.

NURSES' HOMES

In 82 public mental hospitals these have been or are being built. More than 40 per cent. of nurses still sleep in the hospital buildings. However, even in hospitals which have nurses' homes over 20 per cent. of the nurses normally still sleep in the main building. While there must be a substantial reserve of nurses to deal with major emergencies, the regular night staff should be adequate for minor emergencies; the day nurses ought not to have their rest interrupted because the night staff is too small to cope with ordinary small disturbances among restless and excited patients. The board hope that visiting committees will do what is practicable to reduce emergency night work to a minimum.

MATRIMONIAL CAUSES ACT

Some authorities now charge a fee when a medical superintendent gives a report for use in a divorce case under the Matrimonial Causes Act, 1937, and their example will no doubt be followed. The board consider that in principle this charge is not unreasonable, for the medical superintendent is required to spend time on a matter which does not benefit his patient. Whether he should keep the fee will depend on the terms of his contract with the authority. The board hope that authorities will allow their officers a reasonable discretion to waive the charge when its payment would involve real hardship. Most divorce cases are brought by poor petitioners, and sometimes the Poor Persons Committee, before deciding to assist a case, may require from the medical superintendent an indication of the patient's prospect of recovery. If the full fee had to be paid, the petitioner might not be able to proceed at all. It is clearly not the duty of the medical staff to go out of their way to facilitate proceedings, but it is equally unwise for local authorities to seem to obstruct persons who are anxious to take advantage of the new law.

VOLUNTARY ADMISSIONS

Although the board are generally satisfied with the increase in the proportion of voluntary admissions, there is still too wide a margin between the more and the less progressive hospitals. A hospital in which there is overcrowding tends to restrict voluntary admissions, and in some areas too little trouble is taken to avoid certification when it can be avoided. Where the medical superintendent is attached as consultant to the mental ward of the municipal hospital and public assistance institution, he can persuade many patients to enter the mental hospital on a voluntary basis. The board have been criticised for saying that admissions under certificate need not be more than a third of the total, but they name areas in which it is less. Occasionally, however, subterfuges are adopted, with the kindest of intentions, so as to admit on a voluntary basis patients who in fact have no volition. Good intentions can never justify an evasion of the law, and such devices are bound in the end to lead to trouble and ill-feeling.

OUTPATIENT CENTRES AND PSYCHOTHERAPY

The numbers of outpatient centres run in conjunction with mental hospitals continue to increase, and at the end of 1938 the total was 177. More than 19,000 patients attended for treatment, on over 74,000 occasions. These figures do not cover outpatient centres independent of mental hospitals. The board do not know exactly how many these are, but at least 25 are associated with hospitals in the London area and there are at least 32 excluding child-guidance clinics in other parts of the country. Only three public mental hospitals still have no centre associated with them. Most of the centres have weekly sessions, and few are open less than twice a month. The centres are nearly all in the large cities; the small towns and the country districts are still unprovided for. The solutions are either improved transport for patients or visiting teams to outlying places. The board fear that many mental hospital committees do not yet appreciate how important outpatient work is, or how much of the doctor's time and energy it takes up.

A medical psychotherapist has been added to the staff of St. Bernard's Hospital on a sessional basis to deal with patients who appear likely to benefit by psychotherapy. Posts of this kind already exist at Hill End and the Maudsley. The Mental Hospitals Committee advocated a part-time appointment because, among other reasons, a part-time doctor cannot appear to the patient to be responsible for detention. This argument cannot be pressed too far for if carried to its logical conclusion the whole-time staff would be limited to the care of the patient's physical condition.

Mental Deficiency

There has been good progress in the provision of beds for mental defectives. The total number increased during 1938 from 43,552 to 45,717. Further, two large colonies at Botleys Park in Surrey and School Aycliffe in Durham, and the large extensions at Leybourne Grange in Kent, are nearly finished. Almost all the larger authorities in England now have enough beds to meet their more pressing needs—though not enough, and sometimes not nearly enough, for their ultimate needs. The board regret that they cannot record similar progress in Wales. However, in two areas substantial grants by the Special Area Commissioners have greatly eased the position.

OCCUPATION CENTRES

Occupation centres increase in number, though not as rapidly as the board had hoped. A well-equipped centre was opened at Newcastle-under-Lyme—one of the first to be specially designed. These centres serve a useful purpose and undoubtedly reduce the demand for colony beds. They should be used primarily for the tractable and ineducable lower-grade defectives who live in good surroundings. It may sometimes be necessary to admit higher-grade feeble-minded patients, but a mixture of grades makes organisation and teaching much more difficult. In the end the feeble-minded patients, who as a class are socially unadaptable, generally have to be sent to a colony, and the delay makes the formation of good habits more difficult for them. What is saved by postponing their entry into a colony is lost if by the time they enter it they are more troublesome. The training of supervisors for occupation centres has not received sufficient attention. Authorities offer widely different salaries, ranging from a figure which would hardly attract a charwoman to a salary higher than that paid to other mental-health workers. The board feel that the time has come to set up a recognised training scheme for supervisors of occupation centres.

PHYSICAL TRAINING

Physical training is often little adapted for the special needs of mental defectives, particularly those of

the lower grades. Instructors are too often chosen because they have not wholly forgotten their army drill. It would be a help if the Central Association for Mental Welfare could add to its visiting staff a physical-training instructor who has made a special study of the problem and could teach the nurses the most suitable exercises. Such physical training might include breathing exercises aiming at gradual chest expansion, relaxation and coördination exercises, and training of the sense of rhythm—which is keener in many defectives than is sometimes supposed.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

ROYAL EDINBURGH HOSPITAL FOR INCURABLES

Prof. L. S. P. Davidson, speaking at the annual meeting of the Royal Edinburgh Hospital for Incurables, referred to the advantage of having two institutions, one in the middle of the town, the Longmore Hospital, and one in the country at Liberton. These hospitals were intended not merely for the care of the aged and infirm but also to undertake the skilled nursing and medical treatment of ill patients suffering from pain and distress. The nursing of incurable patients was a far greater physical and psychological strain on nursing staffs than the nursing of acute sickness, which in the majority of instances rapidly recovered. Despite the part played by municipal hospitals there was every likelihood that the need for hospitals for the treatment of the chronic sick would increase because the remarkable advance in preventive and curative medicine was steadily bringing a larger number of persons to the age at which malignant disease and chronic diseases of the nervous and cardiovascular systems tended to occur.

TREATMENT OF CANCER

Local facilities for the treatment of cancer were discussed at a conference of local authorities in Stirlingshire with representatives of the county infirmaries and the B.M.A., held to consider the requirements of the Cancer Act, 1939. Dr. P. F. McFarlan explained that the infirmaries at Stirling, Falkirk and Alloa, within a radius of approximately 12 miles, had provided treatment for cancer for many years. To continue to give this treatment at these infirmaries would be the most efficient and most economical plan under the act, he submitted. Deep X-ray equipment was to be provided at Stirling Royal Infirmary in the near future. Dr. McFarlan considered that to send patients from a distance to Glasgow or Edinburgh for deep X-ray treatments, as was done at present, was most unsatisfactory. The conference agreed to recommend to the authorities represented that they should combine for the purpose of carrying out the provisions of the act, and a committee of medical practitioners was appointed to submit a report. If the county councils of Clackmannan and Perth are prepared to join in the scheme, the medical officers of health of these counties and the medical superintendent of Alloa County Hospital will be added to the committee.

EMERGENCY BEDS IN SCOTLAND

Further details are now available regarding the organisation of hospital beds for air-raid casualties and other war purposes. Throughout Scotland 31,000 beds have now become available. These have been obtained as follows. In existing hospitals, 14,500; in buildings converted as hospitals, 5000; in hutted annexes of existing hospitals, 7500; in new hospitals, 3000; and in private houses, 1000. The intention is to increase the number of private houses used for hospital purposes as the occasion arises. All casualty receiving hospitals and base hospitals will be fully equipped and staffed as general hospitals. Operating theatres are being provided or augmented as the case may be. In the event of air-raids casualties will be sent from first-aid posts or from first-aid parties working in the streets to casualty receiving hospitals. If these become full, then arrangements are available for the diversion of the casualties to other suitable institutions. As soon as possible after the air-attack patients who are able to be removed will be transferred to base hospitals situated in the less vulnerable areas. Special centres are also being set up for the treatment of particular types of cases such as head injuries, orthopædic cases, face and jaw injuries, and psychiatric emergencies. Facilities are being provided for continuous transport between hospitals in order that beds may be kept in the first line hospitals for the reception of casualties, and for the transference as quickly as possible to other areas of those patients who can be moved. For this purpose several ambulance trains have been provided, each capable of carrying 270 patients. Seventy-five buses have been converted so as to carry eight stretchers each. There is also a reserve of ordinary buses designed for use in supplementing the arrangements already made by hospitals for the transport of sitting cases.

HORMONE STANDARDS

THE third international conference on the standardisation of hormones, held at Geneva last year, decided that international standards should be established for certain hormones of the anterior lobe of the pituitary gland and analogous substances found in urine and serum, and that international units should be defined in terms of a weight of each such standard. It was further decided that the final preparation of these standards, their dispensing in a form suitable for the use of the laboratory worker, and their storage, preservation and subsequent distribution should be undertaken by the National Institute for Medical Research at Hampstead.

The first of these new standards—that for the gonadotrophic substance of human urine of pregnancy (chorionic gonadotrophin) was established in May of this year. The preparation of two additional international standards has now been completed—namely, for the gonadotrophic substance of pregnant mares' serum and for the lactogenic (crop-gland stimulating) substance of the anterior lobe of the pituitary gland. The former standard has been prepared from material provided by five manufacturing firms in four different countries, and the latter from material supplied by seven manufacturing firms and two research institutes in five countries.

In the case of each standard the individual samples were examined by members of the conference and a suitable mixture was then made to serve as the respective international standard, and finally dispensed in the form of tablets which have been packed in sealed tubes. Each tablet contains approximately 100 international units. The standard for the gonadotrophic substance of pregnant mares' serum is dispensed in the form of 25 mg. tablets, each sealed tube containing ten of the tablets, and the international unit has been defined as the specific gonadotrophic activity contained in 0·25 mg. of the standard prepara-

tion. The standard for prolactin is dispensed in the form of 10 mg. tablets, each sealed tube containing ten of the tablets, and the international unit has been defined as the specific activity contained in 0·1 mg. of the standard preparation.

As with the international standards for other hormones, drugs and vitamins, these standards are held, on behalf of the Health Organisation of the League of Nations, at the National Institute for Medical Research, and are distributed from there to national control centres in other countries for distribution to laboratories, institutes and research workers, and also to workers in countries where national control centres have not yet been established. Those requiring the new standards in the United Kingdom should apply to the Department of Biological Standards, National Institute for Medical Research, Hampstead, N.W.3.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM A NORTH-COUNTRY PRACTITIONER

I

NONE but the greatest brains can think aloud to the tune of several columns a week for a month, but fortunately musing often passes muster for thinking though it is really very different. Thinking implies conscious constructive ordered reasoning. But it is easier to cut out the reasoning, as a staunch old Conservative butcher used to do. By a simple device he discovered he could double his profits on sheeps' heads. He found his customers were willing to pay as much for the brains as the whole head, and when the supply of brains ran out, he told his clients he had "nowt nobbut Radicals," and so labelled he sold the decerebrate variety openly for years.

Most of this was written before war came. Troops marching past my door are singing only the songs of twenty-five years ago, though as yet I have heard none of those excellent Moody and Sankey hymn tunes with suitable verbal alterations which were then prevalent. Possibly this is symptomatic of the decline in church and chapel attendance. From what I hear as they pass the language remains much the same with the same adjectival stresses. Probably there will still be nice homes where sons will for a moment forget where they are and inadvertently make use of the adjectives which are current coin in their new environment. Officers are I expect still filling their spare time playing bridge and countless men are learning to play at "House." A ship's quartermaster I knew found a belt full of money in a lavatory on a troopship on the way home from South Africa and started a crown and anchor board. Doubtless in 1939 he is playing the same game as he did in 1902 and 1914 and investing the profits as he did then. Students and nurses will be gratified at the prospect of qualifying a little more easily.

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Meanwhile it seems doubtful if any stocks have fallen quite so catastrophically as has the capital invested by medical men in practices. It seems somehow incongruous that whilst emergency committees of the B.M.A. are running schemes for the protection of practices, the British Medical Bureau from the same address should head their advertisement in the B.M.J. with a heavily typed: "Special Notice. Many practices are becoming available for immediate purchase for cash at rates lower than those recently prevalent." It may all come right after the war, but the fact remains that the value of practices has fallen to about half what it was a few weeks ago. An old man was wont to advise me: "Always put your money where there is water in it—in beer or bleaching or paper. It costs nothing." With a sly wink and one finger on his medicine bottle he added: "But you have already done so." Perhaps it is the water which has now run out. In any case, partnerships cannot possibly pay out to executors sums based on peacetime valuations, and doubtless many a hurried deed has been drawn up in an attempt to regulate this state of affairs by arranging to pay what the practice is worth two years after the war is over. Some people too are afraid that what is now the voluntary—and therefore democratic—regimentation of a whole profession may prove too great a temptation to some post-war statesman. So it is just possible that such deeds and arrangements may not be necessary.

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The impact of the military machine on medicine has been considerable. The Crimean war was responsible for a uniformed nursing service with obedience as its watchword. In the last war such abbreviations as D.D.M.S. were in daily use and afterwards they were brought back home. The sign ℞ is an invocation to Jupiter for help. The habit of abbreviation has now spread to such an extent any elderly practitioner might well suggest that the ℞ sign should precede the following typical telephone conversation:—

"H.S. speaking. R.S.O. saw this in O.P. Father died of G.P.I. Mother of D.T.s. Previous history of Ts and As in childhood, also S.M.R. Scars of ops. for I.D.K. and L.I.H. Gyn. gives a history of a C.S. and later a D. and C., followed by S.V.H. K.J. present. W.R. negative both blood and C.S.F., so no Sy. smear for G.C. has gone to V.D. Now suffering from P.U.O.; B.P. and B.S. normal. No P.A. No increase V.F. or V.R. No sign of T.B. or dip.; swab shows streps. Widal negative. V.D.H. mitral. I've done a P.V. and a P.R. The pro. says B.O. and P.U. today."

At the end of another war one wonders whether our notes may not have become a series of hieroglyphics.

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Once we are told there was a golden age. There have been ice, stone, bronze and iron ages. Surely this is the paper age. There are newspapers by the million, tons of paper advertisements, floods of books and periodicals, piles used for correspondence and wrapping cigarettes, chocolates, and parcels. Even our wealth has turned to paper. We sign a bit of paper called a cheque and in return receive other bits of paper called £5, £1 or 10s. notes. In fact our enormous wealth is largely a matter of credit and paper. Now we are inundated with a fresh flow of instructions, letters, forms, cards, and coupons. Probably Army form X is still being rendered in triplicate. It is satisfactory to think that the price of paper is controlled.

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All great medical advances have been resolutely opposed, witness the work of Lister and Simpson.

It is no uncommon thing now to class Freud and psychotherapy with these others. Disciples and devotees have a way of being more certain than the master, of building up a system of dogma and doctrine which assumes the character of a religion, even to the formation by schism of mutually intolerant sects. Any scientific questioning of postulates or results is first looked upon as heresy and then dismissed as ignorance. Freudian theories are no more shocking than the theory of evolution, though the latter has stronger scientific proofs. Thirty years after Simpson and Lister enunciated their discoveries results showed their complete truth. Can the same be said of psychotherapy? Results appear inconsistent and unpredictable. Early cases do best but the difficulty is that it is well-nigh impossible to persuade the early cases to undergo this form of therapy. The instinctive reaction to any such suggestion is that one is placing their sanity in question. In addition such treatment is necessarily expensive and provincial hospital psychiatric clinics few and far between. The more chronic cases, even when they have shown some improvement, are remarkably prone to relapse. Mental hospitals have been classified into those where patients are looked after according to the law, those where in addition to this prize flowers and vegetables are grown, and those few which are up to date. This may perhaps account for the slight impression which psychotherapy has made on the psychoses. But in the psychoses the pendulum once more appears to be swinging back to the physical. At the moment it seems as though we had only got hold of a part of the truth.

I have never seen such treatment do any harm. It is not only in the chronic abdomen of women that psychotherapy does less harm than more generally accepted methods of treatment. A business man with a history of asthma in childhood found his sole joy in achievement. He rescued a derelict manufacturing concern and made it run on oiled wheels at a substantial profit. Whenever anything at the factory required his concentrated attention he was very fit. Between times when he had grown bigger and better chrysanthemums than anybody else he turned to keeping exotic fish. In an interval when neither the factory nor the fish required him, he developed a pain in the groin. A surgeon told him that he had a varicocele, must wear a suspensory bandage, and that no operation was indicated. One day in London he still had a pain and saw a really eminent surgeon who operated to cure the varicocele. Afterwards he still had a pain and in addition an incisional hernia. When next he saw the eminent surgeon the latter arranged to cure the hernia and removed one testis. But he still had a pain and one night in a London hotel had acute retention of urine. A genito-urinary surgeon removed his prostate and he then developed frequency of micturition. After a course of vaccines and physiotherapy he arranged a consultation between the eminent surgeon, the genito-urinary surgeon, and a really first-rate physician, as a result of which he was sent to South Africa for six months. He returned home with a pain in the groin and intolerable frequency. At this stage he explained that he had now spent some £4000 and was willing to try psychotherapy. All went well for a few months and instead of passing water every few minutes, he was able to go for an hour without doing so. Then one day he went to a flower show and was seized with an attack of asthma. A well-intentioned layman, with ephedrine in his pocket, and ignorant of the fact that it may act as a bladder irritant, relieved the asthma. The effect on the frequency was catastrophic and he decided that psychotherapy was useless. He continued with his pain in the groin and died of a cerebral hæmorrhage. With that history in mind I look on psychotherapy as relatively innocuous.

Panel and Contract Practice

Increased Panel Lists

GLASGOW insurance committee has been considering an increase in the number of patients for whom insurance practitioners may accept responsibility. Hitherto Glasgow has fixed a maximum of 2100 with an addition of 1300 for an assistant, and it would require the special sanction of the Minister to go beyond a maximum of 2500 for a man in practice single-handed, or an average of 2500 with a personal maximum of 3000 for partners and 1500 extra for a permanent assistant. At the outbreak of war the health departments in England and Scotland warned insurance committees that some latitude might be found necessary and a general approval was given for an addition of 500 to the prescribed maxima. It was also hinted that if military calls on civilian practitioners became heavy some further increase might become necessary. Glasgow's proposal has met with some lay opposition, chiefly to the effect that for doctors, like other workers, there is a reasonable limit to the work they can undertake. Any further increase in the number of panel patients would lead to scamped work. The obvious reply is that the new maxima in Glasgow are only 100 more than has long been permitted in most other areas and that no practitioner will immediately take on an additional 500. Insurance practices in vulnerable areas are already affected by evacuation and there will be a continuous loss as enlistments become known to approved societies. London and most other insurance committees have already agreed to raise the maximum from 2500 to 3000.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 11, 1939

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1465; whooping-cough, 867; diphtheria, 967; measles, 1146; pneumonia (primary or influenzal), 624; puerperal pyrexia, 172; cerebro-spinal fever, 26; poliomyelitis, 16; polio-encephalitis, 3; encephalitis lethargica, 6; dysentery, 41; ophthalmia neonatorum, 71. No case of cholera, plague or typhus fever was notified during the week.

Deaths.—In 126 great towns, including London, there was no death from smallpox, 2 (0) from enteric fever, 2 (0) from measles, 2 (0) from scarlet fever, 5 (0) from whooping-cough, 19 (0) from diphtheria, 38 (5) from diarrhœa and enteritis under 2 years, and 41 (3) from influenza. The figures in parentheses are those for London itself.

Southend-on-Sea and Liverpool each had one death from typhoid. Fatal cases of diphtheria were scattered over 18 great towns, Poole reporting 2. Birmingham had 6 deaths from diarrhœa, Liverpool 3, Heston and Isleworth 4, Liverpool and Nottingham each 3. Three deaths in Birmingham were attributed to influenza.

"... And it oughtn't to need a war in order to make a nation paint its kerbstones white, carry rear-lamps on its bicycles, and give all its slum children a holiday in the country. ... However, it *has* needed one: which is about the severest criticism our civilisation could have."—MRS. MINIVER, in the *Times*, Sept. 29.

LETTERS TO THE EDITOR

REHABILITATION OF THE TUBERCULOUS

SIR,—At last! In your issue of Nov. 11 I perceived echoes of a voice—my own—which had cried long in the wilderness. Evidently there were ears in that wilderness, however, for now your correspondent "T. B." is crying in the same key and your leading article provides a harmonious and authoritative obbligato.

Of course the rehabilitation of the tuberculous must be handled on a national basis. Of course it must provide "remunerative employment for ex-sanatorium patients either in colonies or in special factories under medical supervision." Of course regional control will prove more effective than "the isolated and independent action of separate local authorities." I gather that "three national organisations with the word tuberculosis in their titles" are to appoint a liaison committee to consider these points; but is there, in fact, any need for a committee to confirm the obvious? Surely what this committee will need to do is to work out a scheme indicating (*a*) who is to provide the remunerative employment, (*b*) who is to meet the losses (if any) incurred and (*c*) where the capital is to come from. Local authorities, and even coalitions of local authorities forming a region, are likely to fight shy of anything in the nature of municipal trading: yet without trading how can there be remunerative employment? And without the coöperation of the local authorities where is the financial responsibility to rest? It is a big problem. There are 70,000 sputum-positive cases in the country and only 30,000 beds for them (even in normal times). The scheme must therefore envisage the provision of "remunerative employment" for tens of thousands of people if it is to be anything more than a pious demonstration of benevolent intentions.

In 1930, in collaboration with Mr. Reynell Wreford, I submitted a scheme to the Ministry of Health. The proposals were never seriously challenged. It was not disputed that they had merit. But nothing happened; the echoes died away, and the wilderness remained. In 1936 further efforts were made, in connexion with an interdepartmental committee, to draw attention to the necessity for the national organisation of rehabilitation. This time the scheme was extended to include all disabled persons, and not the tuberculous alone. But it might as well have included the denizens of the moon, for it evoked neither criticism nor action. Despairing of securing action—or even reaction—at home, I next incorporated the scheme in my address on the rehabilitation of the tuberculous for the 1939 conference of the International Union Against Tuberculosis to be held in Berlin last September. There was no lack of action this time. No sooner had proofs been circulated than war broke out.

I am, Sir, yours faithfully,

PENDRILL VARRIER-JONES.

Papworth Village Settlement, Cambridge, Nov. 21.

EXAMINATION OF RECRUITS

SIR,—There is obviously no doubt in the minds of medical men today, whether radiologists or clinicians, that an X-ray examination of the chest is desirable both in the interest of those going into the Services and of others who may be associated with them. Furthermore, the cost of such an examination will be negligible in comparison with that of paying pensions to those who are incapacitated as a result of such service. The real question, which has not yet been solved, is how this X-ray examination should be carried out. Various methods have been suggested and are being investigated by the Ministry of Health. Of the alternatives, my opinion is as follows:

1. Fluoroscopy only is wrong, (*a*) because a certain number of lesions will not be seen even by the most experienced observer; and (*b*) because such examination would form no permanent record.

2. Miniature radiography as carried out in this country at present would not be sufficiently accurate owing to the lack of detail in the films, at least, judging from those I have seen. I cannot say whether this is due to the technique employed or to the screen, camera, lens or film, for miniature radiograms taken in Germany and in America seem more satisfactory.

3. Paper films have passed the experimental stage and they could be used satisfactorily providing that they were taken by expert radiographers and viewed under proper conditions. Even then there would undoubtedly be cases in which celluloid films would be necessary for confirmation.

4. There is no doubt that the routine method of taking one 15 by 12 in. celluloid film in each case is the ideal, and that this or the paper film is the only method which can be immediately brought into use in the present emergency. Facilities for screening certain cases would also have to be provided.

I am, Sir, yours faithfully,

Devonshire Street, W.1, Nov. 27. J. V. SPARKS.

SIR,—As one who has been engaged for some years in the examination of recruits for the forces I should like strongly to endorse the remarks made by "Chairman of a Board" in your issue of Nov. 11. Amongst the instructions laid down for the selection of recruits, the following were some of the requirements. A complete medical history; evidence of nervous stability; exercise-tolerance test, where there is any doubt about circulatory efficiency; auroscopic examination and hearing test; pupil reflex to light and accommodation, eye movements and colour vision; knee-jerks and other reflexes; and, of course, the usual measurements and a complete examination of the various bodily systems. Every medical man who knows his job is aware that it is impossible adequately to carry out an examination such as this in 5 minutes, much less in 2½ minutes, as appears to be suggested by the authors of the present regulations. The remuneration received for this rather comic examination works out at 1*s.* 4*d.* per recruit examined, or, in the case of the expert who takes only 2½ minutes, at 8*d.* per recruit. I suggest that the inscription, E. & O. E. in bold letters of red ink should be written across each report and initialled by the chairman.

I am, Sir, yours faithfully,

Isle of Man, Nov. 22. B. J. COURTNEY.

INTESTINAL BACTERIA AND RESISTANCE TO OXYGEN-WANT

SIR,—In a previous letter[1] it was reported that the resistance of white rats to anoxia may be definitely increased by feeding on a diet consisting wholly of carrots. Since then these results have been confirmed and the factors underlying this favourable effect include (*a*) low protein content, (*b*) presence of fibre, (*c*) presence of glutamine and (*d*) adverse

1. *Lancet*, 1938, 1, 914.

influence upon intestinal bacterial flora.[2] Other articles of diet giving results somewhat similar to that of the carrots are apples, bananas, parsnips, and beetroot. Protein diets containing meat, casein, fish or vegetable proteins (except zein) give adverse effects. It has recently been found that the adverse effects of protein (e.g., casein) may be counteracted by adding potassium tellurite (5 to 10 mg. or grains 0·07–0·15 per diem per rat of 80 g.) to the diet. This substance in very low concentration inhibits growth of gram-negative bacteria, including *B. coli*,[3] and also its administration by the mouth has been suggested for the treatment of carriers of *B. typhosus*; by mouth it is *relatively* non-toxic. Since the animal experiments with the protein diet indicate that the resistance (time of survival) to very low oxygen pressure (7 per cent. of one atmosphere; air barometric pressure 245 mm. Hg, temp. 33° C.) is more than doubled by small doses of potassium tellurite, its trial at high altitudes and in patients with severe anoxia (pneumonia, heart disease) seems justified. The evidence from the animal experiments is that during severe anoxia poisons are produced from protein in the gut and these poisons have been lessened and antagonised by the above methods in white rats. The dyes acriflavin, brilliant green and gentian violet, in doses similar to the above have also given some favourable results in antagonising the protein effect; so have diets containing adsorbents—e.g., charcoal, paper pulp, koalin.

I am, Sir, yours faithfully,

London, N.W.3, Nov. 23. J. ARGYLL CAMPBELL.

PUBLIC MEDICAL SERVICES AND EVACUEES

SIR,—In common with many other services, the London Public Medical Service has had to face the problem of the large number of subscribers who are evacuees, either voluntary or under the Government scheme. The unaccompanied children are, of course, lost as subscribers "for the duration," or until their parents bring them back. But in London we have an appreciable number of subscribers who have gone away on their own account, and who, having become accustomed to insurance against the risk of a doctor's bill, are anxious to retain this advantage. The London Public Medical Service has, up to the present, told these subscribers that if while away but still keeping up their subscriptions they incur a doctor's bill we will pay or help to pay it. A considerable number of such claims have been paid, the extent of the grants being based on the National Deposit Friendly Society scale and also on length of membership. Such a plan, while convenient for a short time, is not suitable for a long period.

From Jan. 1, 1940, therefore, we propose to adopt the following plan. Each subscriber who has left or proposes to leave London on account of the war, and keeps up the necessary payments, will be given a card to present to a local doctor of the subscriber's own choice. We ask such doctors to accept these subscribers for a quarterly payment of 3*s.* 3*d.* per person, which will be guaranteed and paid by us in full even if the subscriber ceases payment during the quarter. The subscribers will be urged to select a doctor immediately on arrival and not to wait until they are ill. This capitation fee is to cover an ordinary general-practitioner service with the usual medicines. It is better than national health insurance financially, apart from there being no record keeping or other regulations. The success of the scheme depends on the coöperation of doctors in the reception areas. It should appeal to them because public medical service subscribers belong to a class which finds it difficult to meet bills. A guaranteed net payment of 13*s.* a year with no record keeping or other clerical obligations is a distinctly better proposition than the chance of recovering a bill from total strangers, or the unpleasant alternative of trying to get cash payments from people who are often in straitened circumstances. I shall be glad to answer enquiries from other services as to our administrative procedure.

I am, Sir, yours faithfully,

Tavistock Square, W.C.1, Nov. 23. ALFRED COX,
Secretary, London Public Medical Service.

2. *Quart. J. exp. Physiol.* 1939, **29**, 259.
3. Garrod, L. P., *St. Bart's. Hosp. Rep.* 1933, **66**, 208.

EVACUATION AND THE CHILD'S MIND

SIR,—The evacuation schemes are designed to afford protection for the population and to support morale; it is therefore important to conserve as far as possible those elements in our social and family life which foster courage and trust, now and for the future.

It appears that a plan is being considered which would involve separating large numbers of children between the ages of two and five from their mothers. If this were done a strain would be put on the child's self-sufficiency for which he is seldom well prepared. At a time when his need for security, and the comforting assurance of familiar faces, is great, his removal from his parents and home will tax him severely; at a later age the separation is better endured. Unfortunately the effects of this strain are not always immediately apparent, but may show themselves in unsatisfactory or unhappy social relationships later in life.

These considerations should not be overlooked when framing a practical policy. Even a situation of emergency should not be allowed to divert our attention from the basic needs of the mental and social development of our future fellow citizens.

I am, Sir, yours faithfully,

London, Nov. 26. JOHN RICKMAN.

ANTENATAL AND POSTNATAL CARE

SIR,—I much appreciate the kindly review of the 3rd edition of my book "Antenatal and Postnatal Care" in your issue of Nov. 18. I beg leave, however, to join issue with the reviewer when he says, referring to the section on the toxæmias of pregnancy and the twelve-year study of the remote prognosis of these disorders carried out by Miss Dodds and myself at University College Hospital: "This seems substantially to support the view that pregnancy may be regarded as one of the most delicate tests of renal function, in the presence or absence of any previous history of nephritis." On the contrary, the study showed that there are better tests of kidney function, and I had thought that this was made abundantly clear in my book. It is shown there that pregnancy may be an unreliable test of renal function, for in a large proportion of cases of chronic glomerular nephritis complicating pregnancy there may be no exacerbation of symptoms and no apparent consequent deterioration in the patient's condition either during the pregnancy or after it. If your reviewer had said that the findings supported the view that pregnancy is the best test of stability of blood-pressure I should have agreed with him, for considerable evidence was found, and is stated in my book, that the cause of "recurrent toxæmia" is in the great majority of cases to be found in a latent or actual hypertension.

I am, Sir, yours faithfully,

F. J. BROWNE.

University College Hospital, W.C.1, Nov. 20.

A PLAN FOR BRITISH HOSPITALS

SIR,—The correspondence provoked by your special commissioner's article has proved most enlightening. If, as I presume, you have printed a fair sample of your correspondence then it seems on the whole that to the general practitioner the plan appears reasonable, whilst to the consultant it appears execrable. As both are concerned with the care of the sick, the divergence of their views is inexplicable save on the grounds of difference in personal interests.

Looked at from the point of view of the patient the case for decentralising the city hospitals is difficult to reject. I do not think we need take too seriously the horrifying picture of bus-loads of dyspnœic patients plunging along our arterial roads on their frantic way to the country hospitals. In his wisdom your commissioner had provided against this. Nor need we attach undue weight to the fear that decentralisation will remove the patient farther from his friends. Scrutiny of patients' addresses in the wards of any London hospital would, I suspect, show that the transfer of those patients to a hospital in the outer suburbs would bring the majority nearer to their friends. These are not very strong objections to raise against the acknowledged advantages to the sick of sunlight, fresh air and quiet. And from the point of view of the hospital the advantages are obvious. To see this one has only to contrast the spacious structures possible where ample cheap ground is available with the cramped institutions of our large cities. In fact the only argument against decentralisation appears to be the inconvenience and possible disadvantages it may have for the consultant.

The one point upon which your commissioner and your correspondents seem agreed is that decentralisation of hospitals will require the employment of more whole-time officers with the result that consultants, as we now know them, will become of increasingly less importance and perhaps disappear. Is the present system of consulting medicine such a fine structure that any great sacrifice would be justified for its preservation? What purposes does it serve in relation to our hospital system at present? It provides free treatment for the sick poor; it provides a body of experts; it is largely responsible for clinical education. Could these duties be discharged as efficiently by physicians and surgeons who are not engaged in private practice?

The institution of whole-time officers would preserve the tradition of free treatment of the hospital sick. The present system of Robin Hood ethics by which private patients are overcharged so that hospital patients may be treated free was perhaps justifiable once, but now it is an anachronism which, I think, many doctors dislike. Dr. Izod Bennett can think of two reasons why medical men enter whole-time service, either lack of initiative or devotion to research. He may add a third: a distaste for the financial transactions of consulting practice. This distaste will, I venture to think, be a factor in influencing men to apply for whole-time appointments.

The claim that the honorary consultants are the experts of British medicine and surgery is at present largely true. That they are not as expert as they might be is also probably true. How many of us have seen young men, doing excellent work in advancing medicine, forced to relinquish their investigations by the necessity of devoting their time to private practice? Relieved of this necessity they would have advanced much farther and the whole-time posts suggested by your commissioner in removing this necessity can hardly fail to raise the standard of British medicine.

And then there is the claim that the consultants are essential as teachers of medicine. As the majority of medical students are destined for general practice it is argued that their clinical education should rest mainly with those actively engaged in private practice. This argument might reasonably be regarded as a plea for attaching general practitioners to the teaching hospitals, but it is apparent from the use made of the argument that what is meant by private practice is private consulting practice. I would question the especial competence of the majority of consultants to enlighten the student on the everyday problems of a general practitioner. The consultation is a comparatively rare and unusual aspect of general practice. The nearest approach which a consultant makes to the medical life of a general practitioner is when he attends the outpatient clinic; and your commissioner has wisely arranged for his whole-time director to do the same. It is true, of course, that the personal problems of private patients differ from those in hospital, but on this point the general practitioner is certainly the expert. Apart from these general considerations the view is often expressed that whole-time workers do not give such practical instruction as do consultants engaged in private practice; that they teach students to subordinate history-taking to laboratory investigations. I received a part of my training from one of the first whole-time physicians and I am grateful to him for the finest instruction in bedside medicine that I have ever heard. One of the most practical and helpful books ever written for the general practitioner is Lewis's "Diseases of the Heart." If this is any indication of the teaching given by the present whole-time workers then I cannot see anything but good coming to English medicine from receiving more of it.

I am, Sir, yours faithfully,

Nov. 22. A PRESENT WHOLE-TIMER.

SIR,—It seems to an outsider like myself that it is a mistake to treat the voluntary hospitals as though they were a uniform group of institutions. They range from small cottage hospitals, attended by the local general practitioners, to the great teaching hospitals with their elaborate equipment and laboratory facilities and large staff of the highest standing. The voluntary hospitals can no longer lay claim to be the principal institutions concerned with the medical relief of the sick poor; most of that work is carried out, and with increasing success, by the hospitals under the control of the various local authorities. The voluntary hospitals must justify their existence on quite different grounds.

An essential preliminary step is for the teaching hospitals, both undergraduate and postgraduate, to dissociate themselves immediately from the others, who will survive or go under on their merits. The teaching hospitals, as everyone recognises, render an indispensable service to the country by training doctors and nurses and by being responsible for most of the significant contributions to medical research. They should be regarded as what they are, namely university hospitals. The medical schools of this country receive very considerable grants from the Government because it is admitted that medical education cannot be self-supporting. Similarly, the country must be made to understand that clinical medical education and research likewise cannot be self-supporting, and that the institutions in which these vital activities are carried out must receive a grant from a central body corresponding to the University Grants Committee. The teaching

hospitals would then be maintained from three sources —private charity, payments by patients, and, to the degree that was necessary, government support. I, for one, am not afraid that such government support would necessarily lead to any grave disadvantages. The experience of the universities is that the Government, when making a grant, is only concerned to see that the institution maintains a high standard of efficiency, and is very grateful if others are prepared to bear the burden of detailed administration. Hospital boards would naturally have to be reconstituted so as to diminish the representation of the purely charitable lay element and increase the representatives of the profession itself and of the appointees of the government or other authorities. This proposal would, I think, solve in the fairest possible way the financial problems of the teaching hospitals, which are otherwise bound to become increasingly grave in the future. I do not believe that charitable support will be withheld because of the government help. The universities and medical schools are constantly receiving endowments from benefactors in spite of, or because of, the fact that they are also subsidised by the Government.

The other problem is that of organising the work of the teaching hospitals. I am a little pained to find running through your correspondence the suggestion that only the third-rate man is prepared to take up whole-time work, and that the whole-time professors of clinical subjects are not making any significant contribution to the advancement of knowledge. Both statements, in my opinion, are unfounded. We know that, in the sciences, men of the highest intellect are willing and anxious to hold full-time appointments which give them security of tenure together with adequate opportunities for research. Is it suggested, for example, that the whole-time professors who constitute the major part of the membership of the Royal Society are not equal in calibre to the part-time consulting staff of the voluntary hospitals? It is becoming increasingly evident each year that most of the important contributions to medical research in this country are being made by whole-time workers in teaching hospitals, municipal hospitals and laboratories; this can be confirmed by reference to the medical and scientific journals. I naturally have many contacts with younger men who may be expected to attain the rank of consultants, and I find that most of them are not only gravely anxious about their future from the financial point of view, but are embittered that, during the best and most formative years of their lives, they should be prevented from full access to suitable clinical material which might enable them to make their mark. Instead, they have to fritter away their time in coaching or attending remote outpatient clinics or odd sessions at a clinic until their private practice grows to an extent which will maintain them. Many of them would welcome increasing opportunities for whole-time medical service. I am not suggesting that the voluntary hospitals can or should dispense with the brilliant men who constitute their consulting staff, but I feel that it is both inevitable and desirable that an increasing proportion of the work of these hospitals should be performed by men on a whole-time paid basis.

I am, Sir, yours faithfully,

SAMSON WRIGHT.

Middlesex Hospital Medical School, Bristol, Nov. 24.

SIR,—The hospital scheme outlined in THE LANCET on Oct. 28 is most interesting, and will doubtless receive the expert consideration which it deserves. From the general practitioner's point of view the scheme appears to visualise the extinction of the cottage hospitals. Quite apart from the actual relief of suffering which they afford, cottage hospitals are the real "lebensraum" of the G.P. Around such a hospital the level of general practice inevitably rises. It attracts men of higher qualifications to the neighbourhood and tempts others to raise their status. In our small locality our hospital, with 32 beds, numbers 3 F.R.C.S. and 1 M.D. among its staff, and perhaps the ablest are not among these four. I think that our results will bear comparison with those of most large hospitals.

With one class of patients our results are probably superior to those of the big hospitals—that is, with old people. Old trees will not stand transplanting, and neither will old men. Put them in their local hospital, where they are surrounded by patients they know and can be visited freely by relations they love, and it is amazing what surgical and medical catastrophes they can have and yet survive. Their two great risks are that the nursing staff may try to ape the large hospital and insist on tidy beds, strict routine and too much cool air, or that the relatives may show their concern as they realise that recovery may involve some trouble for themselves. Both misfortunes are fatal. In fact cottage hospitals have an entirely different function and technique from large hospitals; they will in no sense be replaced by outpatient clinics with a few beds in charge of an inexperienced houseman and visited at intervals by an honorary, or by the larger units envisaged by your commissioner. In them the patient gets the utmost of attention with the minimum of upset of his normal life.

Loss of the hospital is by no means compensated by the possibility of an expert opinion. The present-day consultant seldom sees a patient except under the influence of two strong forces—hospitalisation and the aura of the specialist. For some patients these two influences alone are enough to cause a cure, but if this is not so the reactions of the patient are usually very different from those with his own doctor; hence patients sent to hospital for diagnosis not infrequently return with the report that nothing abnormal could be found. Diagnosis and treatment of the patient as a whole can as a rule best be done by his own doctor in circumstances as near normal as possible, and it demands the addition to the facilities at his disposal, not their curtailment. The cottage hospital is beginning to supply this requirement and is developing a generation of practitioners who are almost of sub-consultant status; this is as potent a cause as that noticed by your commissioner (the growth of group practitioner firms) in diminishing the demand for consultant services. Indeed these practitioners are in direct line with the great consultants of the past who nearly all had some private practice of their own as well as their hospital and consultant work. The pure consultant may be necessary but is an unfortunate hyperbole; in an attempt to be scientific, touch with some of the elementary facts of existence has been lost.

That part of the scheme which concerns the cottage hospital and the G.P. seems to the latter to be officially inspired, specialist-minded and blind to the most hopeful development of modern medicine and the teaching of Sir James Mackenzie; it puts back the G.P.'s clock to where it was before the great war. It will bar the study of man as he is in favour of minute dissection in hospital at the hands of specialists in totally abnormal circumstances, and will reduce the G.P. to the level of a glorified clinical clerk. Resuscitation of the consultant should not be at the cost of asphyxiation of the G.P. Appreciation of the magnificent work of the specialists and the large hospitals should not blind us to the humbler but no less striking

advance that is going on outside. If the specialist represents the science of medicine, the G.P. largely represents the art, and true medicine like true living demands the recognition and synthesis of both. In this synthesis the cottage hospital seems fitted to play a most important rôle.

I am, Sir, yours faithfully,

Winsford, Cheshire, Nov. 23. W. N. LEAK.

SIR,—That something must be done about the hospital problem seems certain and your commissioner has at least produced constructive proposals. To have two competing hospital systems as Dr. Dyke points out seems absurd, but it appears from your correspondence columns that many distinguished persons do not regard your commissioner's plan as ideal.

I agree with your commissioner that a system of coequal firms and heads of departments, as in so-called voluntary hospitals, is essential and that it would be a disaster to medicine if the method of staffing used in municipal hospitals became universal. In discussing the hospital system many people are apt to think entirely in terms of bricks and medical officers. They forget that what is best in the long run for medicine is best for the patient. A hospital staff which never sees private patients, as in our municipal hospitals, is as badly off as in continental hospitals where only the very few have this privilege. To shut a man up where he is on a pinnacle and a complete autocrat is good for nobody.

Much as I admire your plan I am sure your commissioner cannot be fully aware of what a need is met by private consultants in the provincial town. Speaking of a place that I know, I am certain that hospital work has the first claim on a consultant's time. Personally, I think hospitals should be regionalised and staffed as your commissioner suggests but that all physicians and surgeons and heads of departments should be allowed to do private practice.

In conclusion I should like to say that your commissioner has performed a valuable duty in calling attention to the shortcomings of our hospitals and in providing what he thinks are the remedies. It only remains at a later date for the ideal plan to be worked out. Or are ideal plans always doomed to failure?

I am, Sir, yours faithfully,

Plymouth, Nov. 20. ERIC WORDLEY.

SIR,—Your correspondent signing himself "Last Ditch" is right. No idea can survive much organisation, which is apt to bring about the very antithesis of its original impulse. One need not seek far for examples. The dignity and fitness of trade by barter has been destroyed by organised commerce, so that instead of folk being short of commodities because there are not enough of them, they are short because there are too many. The founder of our religion taught followers to love their enemies; Constantine organised that religion and now we are taught to kill our enemies. The impulse to create music for themselves has gone from most people now that music is nationally organised on the wireless. Organised patriotism produces nationalism; organised food production destroys the fun of eating; and organised travel the fun of adventuring.

It seems as though the essential power of a man or an idea were something that rouses the suspicion of those lacking inspiration, who thereupon contrive an organisation in order to stifle it. Certainly, organisation makes for greater (statistical) efficiency; the difficulty is that such efficiency is attained by sacrifice of the inward spirit, and that is too heavy a cost to pay. In the case of our own profession, a sturdy individualism is required for purposes of healing, a sense of humour and a fine understanding of the arts and literature. Such qualifications languish in the official atmosphere. Surveying your correspondence column, I rejoice to think that the last ditch will be manfully guarded.

I am, Sir, yours faithfully,

Hove, Nov. 19. D. A. CROW.

THE E.M.S.

SIR,—We should like strongly to commend to the favourable consideration of all officers working in it the changes in organisation in the E.M.S. as explained by the Minister of Health last week. The new conditions are the result of prolonged negotiations with the Ministry, and although inevitably they are in some points a compromise we believe them to be a substantial improvement upon the old. In particular it is to be hoped that the more favourable terms for part-time service will induce many whole-time officers to transfer to part-time and so make their skill and experience available to the general public, instead of being to a large extent wasted as they are at present. Individual cases of hardship and inconvenience there are bound to be, but we are confident that these will be borne with the public spirit which has always characterised our profession.

May we take this opportunity of referring to another matter? There is a suspicion amongst some doctors that the Ministry of Health may be proposing to use the E.M.S. as the thin end of the wedge for a post-war State medical service. We can assure such, on the highest authority, that nothing in further from the Ministry's intention and that all such fears are groundless. It may well be, of course, that after the war economic conditions may make some form of assistance to the voluntary hospitals, by grants-in-aid or otherwise, necessary, but that the voluntary system will continue there is no reason to doubt.

We are, Sir, yours faithfully,

ROBERT HUTCHISON,
HUGH LETT,
Nov. 27. WM. FLETCHER SHAW.

SIR,—The Minister of Health's scheme of reorganisation for the Emergency Medical Service was announced by him in Parliament last week and published in detail in the medical press. In general he has accepted the proposals of the Central Medical War Committee as elaborated and negotiated by a special committee set up for the purpose. This special committee of the Central Medical War Committee, now known as the Advisory Emergency Hospital Medical Service Committee, includes not only members of the parent committee but representatives of the three Royal Colleges, including their presidents, London and provincial group officers and representative practitioners actually enrolled in the service.

It is, in the main, the profession's own scheme which the Minister has adopted. Its four cardinal points are:

(1) The creation of a definite establishment of whole-time, part-time and sessional appointments.

(2) The creation of part-time appointments at £500 a year for practitioners of consultant and specialist rank.

(3) The substitution in a large number of hospitals of the payment per occupied bed method of remunerating medical staffs for the sessional method hitherto in operation.

(4) The recognition of the advisory emergency hospital medical service committee of the Central Medical War Committee as the body to be consulted by the Ministry of Health on questions relating to the Emergency Hospital Service.

It is not always easy to adapt a large service to the rapidly changing conditions of war. I do, however, believe that the reorganisation now being effected represents a substantial advance which is in the interest of the Government, the profession and the community generally. As chairman of the Central Medical War Committee I commend the proposals to the profession.

I am, Sir, yours faithfully,

H. S. SOUTTAR,

Chairman, Central Medical War Committee;
Nov. 28. Chairman of Council, British Medical Association.

THE CONSCRIPTED PSYCHOPATH

SIR,—In your issue of Nov. 4 you kindly inserted a letter from me calling attention to the fact that men were being enlisted who were likely to have a nervous breakdown early in their military career. Four letters have since been published on this subject, two in your contemporary and two in your own journal. I have received twenty letters, and I have had several conversations with doctors in a position to know the facts. I have also heard of some old patients of my own whose laboriously acquired stability has been broken down by a few weeks of service. I think therefore that there is a problem.

A Chairman of a Board wrote to THE LANCET on Nov. 11 to ask if I could tell him how to recognise these patients in a few minutes. I do not think that anyone could tell him how to do that. He says that examiner No. 1 has 6½ minutes to test the vision, to examine the nervous system and to take a complete medical history. As there were still 18½ minutes left distributed among other members of the board for the rest of the body, I feel that No. 1 has a grievance. It is not always easy to get a good psychiatric history in a single interview no matter how long it is. Your genuine neurotic is not always a person who is expansive at the first interview. He is not always a person who will buttonhole all and sundry about his health. There are such, but there are also many who are ashamed of their neurosis, who will try to conceal it, who will not own up till they really get to know the doctor. This kind will certainly not tell their troubles to a board. The difficulty should, however, be got over without much trouble. Every person in this country has a doctor. It would be very easy to arrange that every recruit should bring a short note from him. This would say that the person was never ill, or that he was always falling ill or something in between. The doctor who has had someone on his list for years might surely be trusted in this matter. He is the one person who really knows the history. Unfortunately the patient whose case stimulated me to begin this correspondence brought such a report from his doctor, but it was ignored, and I have been told of others.

The admission of unsuitable persons is not, however, merely a question of the neuroses. In a hospital which I visited lately there are patients returned from France with grave organic diseases such as general paralysis and disseminated sclerosis, in addition to several cases of severe neuroses and even psychoses. It is true that these were reservists who had been called up, and therefore the responsibility does not rest with the boards. It would seem that the investigation into these cases also had not been searching enough. As a practical attempt to meet these difficulties I would make three proposals:—

(1) Real histories could be got without difficulty.

(2) It might be a good thing if hospital physicians were chairmen of the boards. There are many of these in cold storage. From their long experience in outpatients they have acquired special facility in spotting quickly the people who are likely to have something wrong, the people who should be set aside for further consideration.

(3) For some of these a specialist assessor should be available—psychiatrist, aurist, neurologist.

I should like to call special attention to Prof. Millais Culpin's letter on Nov. 11 which shows conclusively that a large proportion of patients who broke down might have been spotted beforehand, had a psychiatric specialist been available. I think that the same would hold good for early physical cases.

I am, Sir, yours faithfully,

London, S.W.1, Nov. 27. T. A. ROSS.

INDEMNITY FOR LEGAL ACTIONS ABROAD

SIR,—The London and Counties Medical Protection Society has received many requests for some form of indemnity available to doctors practising outside the British Isles. Although membership of the society has at all times been open to these practitioners, the society has not hitherto undertaken cases for trial in colonial or foreign courts. The council has now succeeded in arranging for an indemnity against actions overseas. This will be available to members on payment of an additional subscription of £2 per annum and will be for a maximum of £1000 in any one case or £2000 in any one year. Under the new scheme the society has made arrangements with Lloyds, whose organisation is world-wide, for cases to be dealt with locally after receipt of the member's application and its consideration by the council. Arrangements have also been made for dealing expeditiously with urgent matters. Full details will be sent to any practitioner who is interested.

I am, Sir, yours faithfully,

GEORGE F. STEBBING,

London, W.C.2, Nov. 22. Chairman of Council.

MEDICAL LITERATURE

SIR,—I was much interested in the fascinating report of Sir Robert Hutchison's lecture on "Medical Literature" in your issue of Nov. 18, especially in his remarks about medical textbooks. As a student, now nearly qualified, I have read a fair number of these textbooks. What a comparison they offer in style and readability! Students are prone to read what appeals to them in medicine as in other subjects. How anyone can read through a tightly-packed volume of small print with no pictures to illuminate the text I don't know. Good illustrations may convey as much as whole paragraphs of print. In the introduction of his "Pathology" Boyd says, "A speaker, whatever his subject, must keep his audience in mind, otherwise he is lost. Nor can *the writer* afford to forget this elementary truth." That puts the success of medical literature in a nutshell. Just as in the realm of commerce the good shopkeeper studies effective window-dressing, so the medical writer should cultivate the art of literary window-dressing.

I hope Sir Robert Hutchison's remarks will bear fruit.

I am, Sir, yours faithfully,

J. B. GURNEY-SMITH.

St. Bartholomew's Hospital, E.C.1, Nov. 20.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By MEDICUS, M.P.

ON Thursday Nov. 23 the fourth session of the thirty-seventh Parliament of the United Kingdom of Great Britain and Northern Ireland came to an end and was prorogued to Tuesday Nov. 28. The last part of this session from Sep. 1 until its end has witnessed the tremendous spectacle of Britain and the whole Empire moving into war because of a challenge given to us when Germany invaded Poland. In the words of the King's speech: "This new instance of German aggression and bad faith was a challenge which we could not have declined without dishonour to ourselves and without peril to the cause of freedom and the progress of mankind." The war has not, as yet, developed along the line of mass air-attack, largely perhaps because we have been ready to meet it. The tremendous redistribution of the population brought about by the Government's acceptance of the policy of evacuation of large numbers of the civil population from the towns to the rural or semi-rural areas has created a new situation in our country. Although many women and children have returned from the reception areas to their homes, very large numbers still remain away from the big cities and industrial areas. How far this redistribution will have permanent effects cannot yet be estimated with accuracy, but that it will have a great permanent effect can hardly be doubted. Two of the main effects of this transfer of population are (1) the demand for increased social services in rural areas such as educational and medical services, and (2) the demand for improved amenities such as water-supply, public lighting and, later on, inevitably increased housing accommodation. A break has been made in the century-old tendency to move from the country into the town which will be strengthened by the demand for increased production from the land due to war needs.

* * *

The spot-light thrown on poverty conditions in urban areas was well exemplified in speeches made on the last Tuesday of the session when Scottish education and evacuation were discussed in the House. Many Members of Parliament and many more people outside Parliament have had their attention drawn forcibly to existing evil conditions. As one M.P. put it in the debate: "All of us were struck by the fact that their health was not as it was expected to be, nor were their habits as clean as many people expected." This Member seemed to think that our child-welfare and school medical service had been very deficient. The fact is, of course, that the actual service rendered by the medical and nursing services in these departments has been one of the major influences leading to an improvement in child health, as is clearly shown in the reports of the chief medical officer to the Board of Education. But it is refreshing to have pressure being put on local authorities and the Government by lay Members to increase these services and to improve them, for that in effect is what the criticism involves. The carrying out of evacuation has been a nation-wide propaganda for improved medical and nursing services to bring about improved child health. Another point made in the debate was: "You have brought into the country a large number of children and our hospital accommodation for infectious illness is very limited in the country districts." Mr. Joe Westwood, who opened the debate for the Labour Party, and who is himself an authority on local government in Scotland and on medical administration, said that evacuation had disclosed serious defects in our health services, and that many, as a result, were "converts to the need for improved health and clinical services for our school population." Mr. Westwood referred to the success of "community feeding" in Tillicoultry and Alloa and welfare work at Kilsyth and hoped that the development of this work in other areas would be encouraged. Reference was also made to the hospital problem and particularly the evacuation of patients from the hospitals. These difficulties, which have been very much present in the minds of the medical profession, have been met to some extent at least by the announcement on new medical arrangements made by the Minister of Health.

* * *

The Secretary of State for Scotland (Mr. Colville), in stating the Government's view on evacuation and its problems, gave some interesting figures. There were about 500,000 people in the priority classes in what he called the "sending" areas (a much more manageable word than "evacuating") but only 175,000 took advantage of the Government scheme. Of the unaccompanied children some 60 per cent. are still in the reception areas but the drift back has differed in volume very much in different areas. Thus of the mothers and children who went out from Dundee 74 per cent. have returned, but only 21 per cent. of the unaccompanied children have returned who went from Edinburgh. Counties which retain 80 per cent. of the unaccompanied children—that is the children who went out under the auspices of the school organisation—are Kinross, Midlothian, Nairn, Peebles, Clackmannan, East Lothian, Inverness and West Lothian. In Angus, Argyll, Perth and Wigtown the percentage remaining is under 50. If the Secretary had said from which "sending" areas the children in these counties came the differences might begin to be more readily understandable.

Mr. Colville spoke also of the casualty services and said that 12,000 beds were available which could be increased at short notice to 14,500, and that the programme of extension was working up to 31,000 beds including 10,000 in hutted hospitals or hutted annexes. These hospitals are to admit all persons (civilians) "who may fairly be said to be in urgent need of institutional treatment."

The debate was finally wound up by the Under-Secretary for Scotland, but by that time so many points had been made that it was almost inevitable that the speech should be crammed with many details. The habit of the two front benches exchanging news and criticisms in the early hours of a debate has advantages in days of blackout and B.B.C. news bulletins but it does not give the opportunity for a large-scale survey at the end as has been the custom. And this is hardly because the House is tired for after the Scottish evacuation debate Mr. Mander, urbanely indefatigable, raised a question on the Government's attitude to the League of Nations. Mr. Noel Baker spoke for the Labour Party, and it was not until "five minutes after eleven o'clock" that the Under-Secretary for Foreign Affairs (Mr. Butler) brought the debate to a close. He spoke of the League as one of the greatest organisations ever built up in the long history of human endeavour from the beginning of

which we may yet build up a true method of securing international coöperation.

* * *

It was on the last day of the session, Thursday, that the Minister of Health made his statement on the scheme which will enable specialists at present employed whole-time in the Emergency Medical Service to engage in other work. But this was coupled with the proviso that they may be required to undertake work under "air-attack conditions." No-one yet knows what possibilities of air-attack we may have to face, and the return to the towns of the children in the reception areas is not encouraged by any Government authority.

FROM THE PRESS GALLERY

Evacuation and Hospital Services in Scotland

IN a debate on educational, evacuation, and hospital problems in Scotland in the House of Commons on Nov. 21, Mr. WESTWOOD said the evacuation had disclosed serious defects in their health services. Many who had previously grumbled at the cost of those services, particularly the school health services, were now converts to the need for improvement. This was one of the problems which could not wait until the war was over; it ought to be tackled now. Further development in the receiving areas of the community feeding so successfully experimented with in areas like Tillicoultry and Alloa would be of real value, while the welfare work done in places like Kilsyth could usefully be initiated in many other receiving areas. Developments of this kind should be encouraged by the Secretary of State and financial provision made to further it. The number of hospital beds in Scotland was by no means excessive even for peace-time needs. The House would like to be assured that substantial progress was being made with the provision of the extra beds that would be necessary if air-raids occurred on an extensive scale. As a result of the evacuation of hospital patients there were now thousands of vacant beds in Scottish hospitals, and the greater number of those beds should be made available to people who required them. The large personnel who had offered their services as auxiliary nurses could not be trained because the patients had been sent home from the hospitals, and moreover, those patients could get neither the proper accommodation nor the proper attention in their own homes. They could not continue to expand the great social services on pre-war lines, but those services must not be destroyed and plans must be made now for their development when the war ended.

Mr. COLVILLE, Secretary of State for Scotland, said that on Sept. 23 Scottish schools were authorised to reopen for medical inspection and treatment. In the reception areas, all the available schools were now open and arrangements had been made for the education of children whose schools had been requisitioned for other purposes. In the evacuated areas several of the secondary schools were now open and work was going on to enable other schools, including the primary schools, to reopen where this was at all practicable. Although a considerable number of the evacuated children had gone back, the teachers and children who remained were settling down in their new environment. The children were definitely gaining in health from the regular hours, sound sleep, and good food they were enjoying in the country. The new interests that country life had brought to the city child might stand him, and the nation, in good stead in future years. Reports spoke of the quickening effect on the country child of association with the city child. The understanding between town and country, which they had all worked for over many years, might have been brought much nearer by this social upheaval. In the reception areas communal feeding was being developed, though in some districts there was a prejudice against it. Supplies of milk under the milk-in-schools scheme had been available throughout. The lack of the usual distributing centres—i.e., the schools in session in the sending areas—had militated against the operation of the scheme for children who had not been evacuated, but with the reopening of schools it was hoped shortly to resume the milk-supply. In all the other areas where the scheme was in operation before the outbreak of war, it was continuing, although, because of transport and other difficulties, on a reduced scale. Taking Scotland as a whole about 50 per cent. of the people evacuated had come home up to the present time, but 60 per cent. of unaccompanied children were still retained. Unaccompanied children had settled down much better than mothers with children. There had been a good deal of exaggeration in the accounts of the condition of the children on arrival in the reception areas, and this had created a quite unwarranted prejudice against the scheme. But there was no room for complacency; far too many of the evacuated children were dirty and badly trained. The success of evacuation could only be achieved by the successful solution of innumerable individual human problems. The local authorities and their officials had done magnificent work, but the solution of these individual and human problems did not lie in the hands of the Government or local authorities. They must rely on the devotion, the patience and the good sense of ordinary men and women, and he believed that they would not rely on these qualities in vain. (Cheers.)

Mr. COLVILLE assured the House that they were making real progress with their emergency hospital service. They had secured for the treatment of casualties some 12,000 beds in existing hospitals, and that number could be increased at short notice to 14,500. Adaptation of mental hospitals and three large hotels should give them in a few months some 5100 additional beds; and hutted hospitals and hutted annexes that were being built would give them 10,000 more. All in, the programme would give them some 31,000 beds. The needs of the ordinary sick and the special war-time problem of military cases were not being overlooked. Hospitals included in the scheme would be expected to admit all persons who might fairly be said to be in urgent need of institutional treatment. The additional hospital accommodation would be available for the ordinary sick if they could not obtain treatment elsewhere. Army personnel in urgent need of institutional treatment were admitted to hospitals in the emergency service in the same way as civilians. In addition, arrangements had been made in Scotland for the accommodation of 500 Army sick who required light hospital treatment which could not be afforded in hospitals under the control of the military authorities. The patients were being admitted, in the main, to base hospitals on the understanding that they would be evacuated as rapidly as practicable if the hospital beds were required for the purposes of the emergency service.

QUESTION TIME

The E.M.S. Agreement

Dr. HOWITT asked the Minister of Health if he was now in a position to state what action he proposed to take with regard to the proposals made to him by the representative committee of the medical profession about conditions of service in the Emergency Medical Service; and whether he anticipated that specialists would now resume their work for the civil population at the general hospitals.—Mr. ELLIOT replied: I am glad to be able to announce that I have agreed with the committee in question upon a scheme which will enable specialists at present employed whole-time in the Emergency Medical Service to engage in other work, whether at general hospitals or in private practice. Under the scheme there will be attached to certain hospitals part-time specialists and consultants at a salary of £500 a year, which will cover not only the part-time work required at present but also any additional work appropriate to their grade that may be required by the circumstances. In other words, this salary will cover present conditions and also air attack conditions. My agreement with the committee also secures that the

arrangements for providing medical services of all kinds for casualties shall be adapted to the varying types of hospitals so that there may be the minimum interference with the ordinary medical work of the hospitals.

Dr. HOWITT: Would the Minister make arrangements for an adequate return of nurses and hospital almoners to carry out the work of the hospitals?—Mr. ELLIOT: I trust that as the work of the central hospitals extends it will be possible to secure the return of adequate staff.

Pay of House Officers

Sir PERCY HARRIS asked the Minister what salaries and allowances were paid by the Ministry of Health to house physicians and surgeons appointed to hospitals organised for war-time service on the outbreak of war; how this compared with rates of pay in voluntary hospitals; and whether there had been any alteration of these salaries and allowances since the beginning of the war.—Mr. ELLIOT replied: The basis of employment in the Emergency Medical Service of house officers was at the outset £350 per annum, normally on a three months' contract, plus board and lodgings or an allowance in lieu. This flat rate was somewhat in excess of the rates paid by voluntary hospitals, though these vary widely according to the type of hospital. This arrangement has now been reviewed, and it has been agreed with the advisory committee with which I have recently been in consultation that no further individual enrolments of house officers in the Emergency Medical Service should be made, but that hospitals should receive a payment equivalent to £200 per annum for each of their house officers who are required for whole-time work under the emergency hospital scheme. The precise allocation of this payment, however, will be a matter for the hospital authorities.

Sir P. HARRIS: Can the Minister give an assurance that he is doing nothing to undermine the great London voluntary hospitals?—Mr. ELLIOT: Certainly. We are working in the closest possible consultation with the voluntary hospitals.

Sector Hospitals

Mr. ISAACS asked the Minister if he was satisfied that the equipment and organisation of the sector hospitals were adequate for the numbers of patients they were prepared to receive.—Mr. ELLIOT replied: I am satisfied that the majority of the sector hospitals are adequately provided for the number of patients which they are intended to receive, but in several of them the equipment and organisation need further improvement. I am making all possible use of the present period of quiescence to this end.

Mr. GRAHAM WHITE asked if the war-time organisation of hospitals in the London sectors was of such a character as to enable medical officers to be liberated from financial and general administration and free to concentrate on arrangements for treatment of patients.—Mr. ELLIOT replied: Yes, Sir, so far as may be, but it is not of course possible to separate medical officers entirely from general administration.

Municipal and Voluntary Hospitals

In reply to Mr. DE ROTHSCHILD, the Minister said that the hospitals in the London region which had been increased in staff and equipment under the Emergency Hospital Scheme were mainly municipal, because such hospitals had necessarily to be sought in the outer part of the region, where there were comparatively few voluntary hospitals capable of expansion. I believe, he added, that all those voluntary hospitals in the outer area that are capable of satisfactory expansion have been expanded.

Outpatients

Sir ERNEST GRAHAM-LITTLE: Is the Minister aware that last year there were over 10,000,000 attendances in the outpatients department of the hospitals and that all this service is now in abeyance, causing very great dislocation in the London area; and would my right hon. friend not only make a note of that fact but keep in mind the necessity of getting teachers for the medical students?—Mr. ELLIOT: I would be unwilling to accept the suggestion to the outpatient services have been in abeyance for London hospitals for 10 weeks, because it is quite at variance with information supplied to me by London hospitals.

Sir E. GRAHAM-LITTLE: Does the Minister realise the suffering such dislocation causes, and that it is impossible to conduct satisfactorily outpatient departments without the honorary staff who cannot be properly replaced by junior and inexperienced officers?—Mr. ELLIOT: The higher the medical skill which can be obtained by the outpatient departments the better, but to suggest that the service is entirely in abeyance is not only going beyond the facts but discourages people from applying, which is undesirable.

Women Doctors in the Services

In reply to Lieutenant-Colonel MASON, Mr. HORE-BELISHA said that three women doctors had been appointed to the Royal Army Medical Corps for medical duties with the auxiliary territorial service.

Sir KINGSLEY WOOD said that the appointment of a limited number of women doctors primarily for duty with the Women's Auxiliary Air Force was also receiving consideration.

The Sex Bar

Captain ELLISTON asked the Minister of Health whether he would advise local authorities that, at least for the duration of the war, it was desirable to suspend any regulation which required women medical officers to vacate their appointments on marriage.—Mr. ELLIOT replied: This matter is one which is within the discretion of each local authority, and I do not consider it necessary at present for me to take any action.

Unemployment among Nurses

Mr. ROSTRON DUCKWORTH asked the Minister whether his attention had been called to the large volume of unemployment among nurses; and whether there was any reason at the present time why fully trained nurses should be suffering from the lack of suitable posts.—Mr. ELLIOT replied: I have received representations to the effect indicated in the first part of the question. As regards the second part of the question I understand that some public health and other hospital authorities and some nursing-homes have, owing to a reduction in the number of their patients, dispensed with temporary nurses who have hitherto been employed to supplement their regular staff. It may also be that persons or families who might previously have employed private nurses are, for financial or other reasons, not now doing so. Apart from these causes I know of no reason why fully trained nurses should be suffering from the lack of suitable posts.

Asked by Mr. HARVEY whether partially trained auxiliary nurses were receiving salaries for hospital work, Mr. ELLIOT replied: I do not think the unemployment extends to the permanent staffs of hospitals, but in any case the responsibility for staffing rests with the hospital authorities concerned. No substantial number of nursing auxiliaries are undertaking hospital work.

Evacuation of Expectant Mothers

Mr. BROOKE asked whether facilities for the evacuation of expectant mothers continued in existence; and, if so, what steps were taken to make known how and where they could register.—Mr. ELLIOT replied: I have authorised evacuation authorities, through the department's senior regional officers, to arrange for the evacuation of further parties of expectant mothers to receiving areas where suitable billeting and maternity accommodation is available. It is for the evacuation authorities to decide in the light of their experience what steps they consider suitable to make known to expectant mothers in their areas the facilities which are available.

Value of Dates as a Food

Mr. HIGGS asked the Chancellor of the Duchy of Lancaster whether he would consider unrestricting the import of Tunis dates, in view of their high nutritional value and their exportation from French territory.—Mr. W. S. MORRISON replied: The matter is under consideration.

. . . . IN ENGLAND—NOW

(FROM OUR PERIPATETIC CORRESPONDENTS)

FOR many of us this is the second time our normal lives have been disrupted and scattered to the four winds never again to form the same whole. I suppose it is no bad thing once in a lifetime to be caught up in a gigantic machine and made to feel very small fry indeed; to be known by a number rather than a name; to be subject to long periods of complete inactivity relieved, perhaps, by short periods of gross overactivity. It provides an opportunity to assess one's object in life, one's aims and directions. But surely once is enough. The trouble is that it goes on too long. Four years was a long time in which to think. The conclusions, the personal ideals, the visions of the future got very dim and foggy and blurred before the end came. So when the end did come there was a feeling of relaxation, not of inspiration. Instead of saying to myself "Now let's get on with the job" I said "Now let's have a rest." A rest from what? I didn't need a physical rest. I had endured no great physical hardships. I had an easy war. And now it has all come back again. Here am I somewhere in England divorced by 150 miles of very dull country from my wife, my family, my work, my home, my hobbies, my interests—and not a hand's turn of anything to do. I find little comfort in repeating to myself, Those also serve who sit and wait. I prefer sitting to standing. Who am I serving by sitting in this most unpleasant makeshift laboratory getting colder and more ill-tempered each day? The poor old British Public? Do they really want me to sit here doing nothing at their expense? They may be stupid, but I don't believe they are as stupid as that.

One thing about war is that it makes you acquainted with bits of country of which you previously had little knowledge. Last war I got to know some very funny bits of Scotland. It is fortunate that I cannot say where I am now, because it is a bit of land doubtless dear to some. That I am not one of those is my misfortune, but hardly my fault. It is on the drier side of Britain, but it is raining now with a determination surely unsurpassed by any place on the wetter side. It has in fact been raining for the past three weeks without intermission except on two occasions when it decided to snow. Let me give you a brief description of this laboratory. The walls are made of cardboard and windows, with warped weather-boarding outside. There are 92 windows in an area of about 90 feet by 25 feet. There are 12 sinks without plugs and the wind whistles up the vent holes as if a mechanical blower were fixed to them. The roof is thatch. The local inhabitants tell me with apparent pride that the winds here come unmolested from the North Pole. Anyway they find little to check their course in this laboratory. Inquiries about heating elicited the fact that paraffin is not rationed as long as it is used for agricultural purposes. As my work is reputed to be bacteriology I felt no qualm of conscience. I am trying the ordinary paraffin stove shaped like a cylinder according to immemorial convention. The only place where any heat comes out of this contraption is at the top. Accordingly by sitting right over the top the upper part of my body gains a little painful feeling, whereas the lower part remains persistently senseless. The temperature this morning when I arrived was 7° C., so I went back to the general shop to see if nothing more effective existed for heating. A brilliant inspiration on the part of the shopman suggested that I might try a church heater. So a church heater it shall be, and what could be more appropriate?

Is this really such a woebegotten place as I make out? Of course not. What of the bracken-covered hills with all the soft reds and browns and yellows and purples; what of the rolling sand dunes; what of the birds and beasts and fishes? Peaceful they are and comforting. But I am perverse. I do not wish to be peaceful—here. I do not wish to be comforted—here. I have been forcibly taken from my peaceful life at a moment's notice and told to be warlike. In this invigorating air I am bursting to be warlike, but I cannot make war on bacteria in the bracken. All my energies must go on viciously filling in forms in triplicate for apparatus I shall probably never use.

What a lot evacuated children are blamed for. I know that many of them arrived in their country homes with little things in their hair and perhaps elsewhere. But they were "little things." Yesterday I was in the next laboratory to mine and was shown a specimen which has just arrived for identification. It was not clear exactly which piece of evacuee provided it. It was a queen hornet.

* * *

When I came down to the country at the end of September I found twenty young patients in the hospital, but evacuated children were nobody's baby just then. No-one knew what illnesses they would get and few of the people I talked to seemed to care. I prayed for a plague which would rouse the authorities, and when there was no plague, I settled down to wait for bronchopneumonia and 1940. But gradually the authorities—mystic word—have been showing that they are interested, and we have been convinced that there really were many administrative difficulties to be overwhelmed before a county institution—which still has to care for mental defect, parturition, old age and heart failure in the locality—could be converted into a first-class children's hospital. So more wards have been opened; dispenser, masseuse, surgeon, dentist, oto-rhino-laryngologist, and ophthalmologist have been appointed, while rooms are prepared for X-ray apparatus and rumour prophecies the miraculous appearance of a path. lab. Not to be outdone I lent a few essential instruments, my wife donated a hairpin when an aneurysm needle was needed, and Matron spent the remains of her savings in buying small enamel chambers from Marks and Spencer.

We are getting the ordinary run of children's diseases, and it is already interesting to speculate on the effects of rustication on London children. We have two children with rheumatic heart disease who broke down soon after the move. I have seen no chorea, but enuresis has become a national problem. We have admitted some of the more trying examples: one becomes extraordinarily embarrassed if his billet is mentioned and has no incontinence here; another is an obviously homesick affectionate little girl separated from her mother and her brother; others regard bedwetting as an ordinary habit or an amiable eccentricity. As a child in my brother's village put it to a farmer's wife: "You have taught me your manners." (This girl wetted the bed for the first three nights. The foster-mother said to her: "If you wet the bed again you won't go to Mrs. Soandso's party and what's more I'll tell Mrs. Soandso just why." She went to the party.)

Many children, on a mixed diet instead of tea and bread-and-butter, with baths, often new clothes, and clean air, look immensely better and are obviously enjoying themselves. The country people have never seen scabies and head lice before—that is their story and they are sticking to it. The practitioner with whom I am staying had seen no diphtheria for several years, but has had several cases, mostly in the indigenous inhabitants, in the past few weeks. The most fruitful contributors to the hospital have been the baby nurseries of one sort or another, who have found themselves sharing the stately homes of England with the Sonne dysentery bacillus. Whooping-cough has infested some of them too, and we have had to set aside a special ward for the treatment of whooping-cough contacts who have dysentery, pyelitis and bronchopneumonia.

Methods in the hospital are much the same, if you allow for a multitude of improvisations of equipment, as in a London children's hospital. We keep the

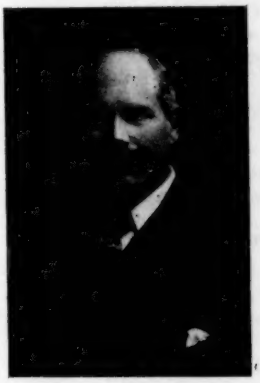
Continued at foot of opposite page

OBITUARY

CHARLES JOHN BOND

C.M.G., F.R.C.S., F.L.S., HON. COL. A.M.S.

Mr. C. J. Bond died at his home in Leicester on Nov. 23 at the age of 83. His life had been a long and full one. After receiving a public-school education he became interested in agriculture before ever he thought of medicine, for which his bent was such that he obtained nearly every gold medal available at University College Hospital. Returning to his native county he early secured a position at the Leicester Royal Infirmary where he shared with Sir Charles Marriott the credit of introducing Listerian methods into surgical practice. But at heart he was all his life a biologist and it was only three years ago that he enunciated what he felt to be a consistent interpretation of the whole of human experience. It was in the make-up of the man that he was not content with observation and treatment, even of a high order, but must go back and back to root principles. He took his place naturally on the Medical Research Council, the Industrial Fatigue Research Board, the departmental commissions on blindness and cancer, the Trevethin committee on the prevention of venereal disease, and finally as vice-chairman of the medical cousultative council to the Ministry of Health. Nearer home he represented his ward on the city council, was the guiding spirit of many philanthropic institutions and bodies, and received the freedom of the city. His interpretation of human experience suggested to him that, while the actions of elementary particles are free and at random, as complexity increases a commonsense relation of cause and effect prevails. Finally in association with life and mind random action comes to be controlled by the organism rather than by the environment, and we reach volition and purposive behaviour. This rather close rendering of his own words may help to illustrate to those who did not know C. J. Bond the springs which actuated him. He has been quite properly described as a great doctor who has fruitfully explored many fields of thought and experiment.



Frank Brown, Leicester.

A few personal details may be added to fill in the gaps. Born in 1856, son of George Bond of Bittersby, Leics., educated at Repton and University College, London, he entered Leicester Royal Infirmary as a pupil in February, 1875, later in the same year becoming demonstrator of anatomy at U.C.L. After qualifying in 1879 he was house-surgeon at Bedford and in 1882 at Leicester. He became assistant surgeon to the Royal Infirmary in 1886 and was on the active staff till 1912 when he was elected a vice-president and later became vice-chairman to the board of governors. He was president of the Literary and Philosophical Society of Leicester 1901–02 and 1935–36. He represented the Medical Research Council on the inter-allied commission on the treatment of war wounds, Paris, 1916–18, and was associated with the late Lord Moynihan as consulting surgeon to the Northern Command. He was awarded the C.M.G. in 1917. He was a member of the Leicester health insurance committee 1913–20 and of the advisory council of the National Health Insurance Committee. In 1922 he was William Withering lecturer at Birmingham university. His better known works included a chapter in "Health and Healing in the Great State," "The Leucocyte in Health and Disease," "Essays and Addresses of a Surgeon" (Galton Memorial lecture 1928), and "Recollections of Student Life and Later Days," in which he paid a tribute to the memory of Sir Victor Horsley.

Mr. Bond married Edith, daughter of George Simpson, J.P., of Hazlebrow, Derbyshire; he leaves a widow, a daughter, and a son who has followed his father's profession.

Dr. C. Killick Millard writes: "By the death of C. J. Bond the city of Leicester has lost its most distinguished and most beloved citizen. I enjoyed the privilege of his friendship for many years. I was associated with him on the Leicester branch of the National Council for Combating Venereal Disease and on the Leicester Cancer Committee, and for the last five years in connexion with the Voluntary Euthanasia Legalisation Society which we founded together. Few men can have been more loved and respected by his friends. Utterly unselfish in all that he did, conscientious in everything he undertook, he was the essence of courtesy, kindliness and consideration for others. The guiding principle of his life was love of his fellow-men—how best he could serve humanity. He carried modesty about his own achievements almost to an extreme; but for this he could, had he wished it, have occupied an even more prominent position in the scientific world than he did. In spite of his advanced years, his mind was keen and alert almost to the end, and he maintained his interest in the many and varied lines of work in which he had been engaged. In his later years I think it may be said that one of his chief interests was voluntary euthanasia."

CHARLES THOMAS KNOX-SHAW

M.R.C.S.

Mr. Knox-Shaw, who died on Nov. 23 at the age of 84, was ophthalmic surgeon to the London Homœopathic Hospital and surgeon to the Buchanan Hospital, St. Leonards, the Tunbridge Wells Homœopathic Hospital and the Phillips Memorial Hospital at Bromley. He retired twenty-five years ago, and since then had been living at Oxford. He was the son of Dr. Archibald Shaw of Mecklenburgh Square, and was a student at Guy's, where he qualified in 1877. He practised for some years in Hastings, moving to London in 1886. He married twice, and by his first wife had three sons and a daughter. One of his sons is now Radcliffe Observer at Oxford and another is treasurer of the University of Cambridge.

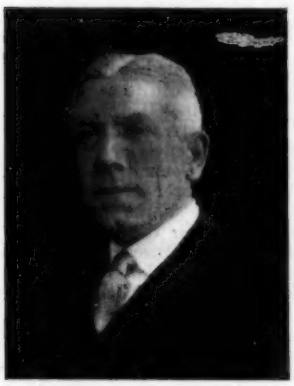
Continued from previous page

children in for longer periods, however, as we are our own convalescent home. We do what we can with revolving shelters, a fleet of old prams, a glass sunroom, and a mercury-vapour lamp. The work is at times aggravating but always interesting. New problems arise continually to fill the mind when it is not occupied with plans for the immediate future and visions of the more remote peacetime era conjured up by your special commissioner.

NAUGHTON DUNN

M.B., LL.D. ABERD.

FOR some months Mr. Naughton Dunn had been in poor health, and lately he had lived quietly at his house near Barmouth. He died on Nov. 19 in Dolgelly Cottage Hospital. His death when, at 55, he should have had many years of useful work ahead, will leave a conspicuous gap in the ranks of British orthopædic surgeons, and orthopædic gatherings at home and abroad will miss his keen mind and twinkling smile.



Elliott & Fry.

Naughton Dunn was born in Aberdeen in 1884, and was educated at Aberdeen Grammar School and Aberdeen University, where he took his M.B. in 1909. After house-appointments at Scarborough and elsewhere he was R.S.O. at the Royal Southern Hospital, Liverpool. There he caught the eye of Sir Robert Jones, and from 1912 to the outbreak of war Dunn assisted him in his private practice, at the same time demonstrating anatomy at Liverpool University. He was appointed surgeon to the Birmingham and District Cripples' Union—the forerunner of the Royal Cripples' Hospital—in 1913. During the war Dunn served with the R.A.M.C., and was associated with Sir Robert Jones in his orthopædic work among wounded soldiers. Since then he had built up an extensive consulting practice in and around Birmingham, and worked with enthusiasm at the Robert Jones and Agnes Hunt Orthopædic Hospital at Oswestry, as well as at the Royal Cripples' Hospital, the Warwickshire Orthopædic Hospital at Coleshill and the Corbett Hospital at Stourbridge. As a lecturer at Birmingham University he proved an excellent teacher. "His skill and judgment as an orthopædic surgeon are well known," writes A. G. H., "but perhaps his most valuable gift to crippled humanity lay in his power of training the younger generation of surgeons in this work. He was a great exponent of Sir Robert Jones's teaching, and as a friend he was true, staunch and lovable, possessing a delightful gift of dry humour." He had a genius for creating friendship among both his contemporaries and his juniors, and as a host he was unrivalled. He gave the impression of being leisurely and deliberate, but in fact he possessed the kind of intelligence that can see several moves ahead. In 1937 the University of Aberdeen granted him its honorary LL.D. This year he was president of the British Orthopædic Association, and delivered his presidential address on some aspects of bone surgery at the association's meeting at Oswestry in May. He wrote a number of papers on bone injuries, flat foot and kindred subjects in medical journals, and contributed to Robert Jones's "Orthopædic Surgery of Injuries."

Mr. Naughton Dunn married Ethel Violet Jackson, and he leaves a widow, a son and three daughters.

Medical News

University of Cambridge

The following have been appointed members of the committee for medical radiology and electrology for 1940: Dr. G. S. Graham-Smith, Dr. G. H. Orton, Dr. Ffrangcon Roberts, Dr. F. G. Spear, Mr. G. Stead, Mr. R. Williamson, Dr. Peter Kerley, Dr. W. P. Philip, Dr. R. J. Reynolds, and Prof. Sidney Russ, D.Sc.

The following have been appointed additional examiners in surgery for the final examination for part I of the M.B. degree to be held in December: Mr. J. B. Hunter, Mr. E. C. Lindsay, and Mr. M. F. Nicholls.

On Nov. 24 the following degrees were conferred:—

M.D.—J. C. F. Lloyd-Williamson.
M.B., B.Chir.—John Aspin* and C. P. Petch.
M.B.—J. W. Landells.*

* By proxy.

Society of Apothecaries of London

At recent examinations the following were successful:

Surgery.—J. B. Gurney-Smith, A. M. McCall, M. F. Smith, and K. Talboys.

Medicine.—G. O. C. Davies-Webb, R. M. J. Franks, E. A. Griffiths, W. C. Heunis, J. N. Hunt, and J. A. Sutton.

Forensic Medicine.—G. O. C. Davies-Webb, R. M. J. Franks, E. A. Griffiths, W. C. Heunis, J. N. Hunt, and J. A. Sutton.

Midwifery.—C. E. S. Myers and J. P. Rochford.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery and midwifery: W. C. Heunis, Lond. Hosp.; and J. A. Sutton, Guy's.

Reform in Irish Local Administration

Our Irish correspondent writes: The government of Eire has recently introduced to the Dail a measure designed to effect a radical change in the machinery of local government. The County Management Bill, as it is called, provides for the appointment of a county manager in each county or group of small counties, to whom many of the present powers of the county councils will be transferred. Each county manager will also be the manager of each borough, urban district, or town governed by commissioners, falling within the county or group of counties of which he is manager. Certain of the powers possessed by county councils and other elective bodies are not to be transferred and are known as "reserved" functions. The most important of these are the powers of making a rate and of borrowing, most of the others being little more than formal. Certain other changes forecast in the bill are the abolition of county boards of health and the virtual abolition of the committees of mental hospitals, their several functions being transferred to the county councils, or virtually to the county managers. Hitherto, since the last rearrangement of local administration in 1928, the county boards of health, although nominated by the respective county councils, exercised their functions independently, and controlled the entire health administration of the several counties. Similarly, the committees of the mental hospitals had under their control the management of the mental hospitals. The bill further provides for the transfer to the county councils of the officers of the bodies which are being abolished, while safeguarding their existing rights.

It is clear that the projected change may have a considerable effect on the local administration of health affairs. The popular elective bodies throughout the country have had little knowledge of and less interest in matters concerning health, and progressive medical officers of health have found themselves hampered by the inertia and opposition of the local politicians. If county managers can be found with a progressive spirit, a greatly improved health administration will follow, but as the county managers will have considerable power, bad county managers could do great harm. The bill has roused much opposition throughout the country, particularly among the members of the local councils, and as there is reason to believe that even in the government itself there is difference of opinion, it is possible that the measure may not be pressed.

Pathological Society of Great Britain and Ireland

The January meeting of this society will be held in the Department of Pathology at Cambridge on Jan. 12, and not at Guy's Hospital.

League of Nations Health Committee

This committee has arranged to set up a subcommittee which may be summoned in an emergency to deal with epidemics of infectious diseases arising out of the war.

Medical Society of Individual Psychology

There will be a meeting of this society at 2.30 P.M. on Dec. 14 at 11, Chandos Street, W.1, at which Dr. H. Crichton-Miller will speak on "Discipline and Leadership in the National Emergency." Visitors will be welcomed.

Manchester Royal Infirmary

Six lecture-demonstrations on the first-aid treatment of air-raid casualties will be given by the honorary staff at this hospital this month. Particulars of the meetings, which begin on Dec. 5, will be found each week in our Medical Diary.

South-West London Post-Graduate Association

No meetings of this association will be held until further notice, but members will be welcomed as visitors at the meetings of the South-West London Medical Society, which are held at Bolingbroke Hospital on the second Wednesday in the month at 3.30 P.M.

British Institute of Philosophy

The third of the special series of free public addresses, entitled "The deeper causes of the war and the issues involved," will be given by The Rt. Hon. Viscount Samuel, in the assembly hall (entrance in Craven Street, Strand) of the Royal Empire Society at 2 P.M. on Thursday, Dec. 7. The series will be continued in January and February by Prof. Ernest Barker, Sir William Beveridge, Sir Richard Gregory and Sir Richard Livingstone. Admission syllabus can be obtained from the director of studies at University Hall, 14, Gordon Square, W.C.1.

Vacancies

Brighton, Royal Sussex County Hosp.—Cas. H.S., £120.
Cape, Huguenot University College, Wellington.—Professor in chemistry, £450.
*Central London Throat, Nose and Ear Hosp., Gray's Inn-road, W.C.*1.—Hon. assts. in out-patient dept.
Chesterfield, Chesterfield and North Derbyshire Royal Hosp.—H.S. to ophth. and ear, nose and throat depts. and H.P., each at rate of £150.
Chesterfield, Chesterfield and North Derbyshire Royal Hosp.—Cas. O. and fracture H.S., at rate of £225.
*Connaught Hosp., Walthamstow, E.*17.—H.P. and cas. O., each at rate of £110.
Derby, Bretby Hall Orthopædic Hosp.—Jun. res. asst. M.O., £350.
Doncaster Royal Infirmary.—H.S., at rate of £150.
*Dreadnought Seamen's Hosp., Greenwich, S.E.*10.—H.P.'s and H.S.'s, each £110.
Holt, Norfolk, Kelling Sanatorium.—Jun. res. M.O., £250.
Huddersfield Royal Infirmary.—H.S. to special depts., at rate of £150.
India, Women's Medical Service.—Four vacancies.
London County Council Infectious Hosps.—Temp. asst. M.O.'s (Class I and Class II), £350 and £250 respectively.
Mansfield, Harlow Wood Orthopædic Hosp.—H.S., at rate of £200.
Margate, Royal Sea-Bathing Hosp.—Visiting surgeon for ear, nose and throat cases, honorarium 20 gns.
Middlesex County Council.—Res. cas. M.O. for Central Middlesex County Hosp., at rate of £350.
*Middlesex Hosp., W.*1.—Hon. dental surgeon.
Newcastle-upon-Tyne, King's College.—Demonstrator in pathology, &c., £300.
New Zealand, Cook Hosp., Gisborne.—Radiologist, £1000.
Oxford, Radcliffe Infirmary.—H.P., obstet. H.S., two H.S.'s, H.S. to ear, nose and throat dept., and cas. O., each at rate of £100.
Plymouth Education Committee.—Temp. asst. school M.O., £500.
Reading, Royal Berkshire Hosp.—Res. anæsthetist, at rate of £250.
*Royal Cancer Hosp., Fulham-road, S.W.*3.—H.S. to radium dept., at rate of £100.
*Royal London Ophthalmic Hosp., City-road, E.C.*1.—M.O. to X-ray and electrotherapy dept., £150.
Ryde, Royal Isle of Wight County Hospital.—H.S., £140.
Salford Royal Hosp.—H.S., at rate of £125.
Staffordshire County Council.—Deputy county M.O.H., £850.
Swanley, Kent, Hosp. Convalescent Home, Parkwood.—Res. M.O., at rate of £200.
Wolverhampton Royal Hosp.—Two H.S.'s and H.P., each at rate of £100.

The Chief Inspector of Factories announces the following vacancies for examining surgeons: Leeds West and Farsley, W. Riding of Yorkshire; Beverley, E. Riding of Yorkshire.

Medical Diary

Week beginning December 4

ROYAL SOCIETY OF MEDICINE, 1, WIMPOLE STREET, W.1.

TUESDAY
2 P.M., general meeting of fellows.
Orthopædics: 2.30 P.M., Mr. C. Lambrinudi: A Further Use of Kirschner Wires. Mr. H. Jackson Burrows: Treatment of Ununited Fractures by Bone-grafting Without Resection of the Bone Ends. Miss M. Forrester-Brown: Simplification of Technique in some Joint Operations.

WEDNESDAY
History of Medicine: 2.30 P.M., Dr. George Edwards: Philip Syng Physick (1768–1837).

THURSDAY
Neurology: 2 P.M., Dr. J. W. D. Bull: Subdural Hæmatomas.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, WIMPOLE STREET, W.1.

MONDAY and WEDNESDAY—4.30 P.M. (Brompton Hospital, S.W.3), M.R.C.P. course in chest diseases.

BIOCHEMICAL SOCIETY

SATURDAY—11.45 A.M. (Courtauld Institute, Middlesex Hospital, W.1), short communications and demonstrations.

MANCHESTER ROYAL INFIRMARY

TUESDAY—3.30 P.M., Prof. H. Platt: Fractures of Limb Bones and Injuries to Joints, Simple and Compound.
FRIDAY—3.30 P.M., Mr. W. R. Douglas: (*a*) Shock and Resuscitation of Shocked Patient; (*b*) General First-aid Treatment of Wounds and Burns.

Appointments

JONES, D. J., M.B. Wales, D.P.H., assistant county medical officer of health for Northamptonshire and district medical officer for Brackley borough, Brackley rural district, and Brixworth rural district.
ROCHE, A. E., M.Chir. Camb., F.R.C.S., genito-urinary surgeon to the West London Hospital.
WALKER, GILBERT, M.B. St. And., M.R.C.P.E., D.P.H., deputy county medical officer of health and deputy school medical officer for the North Riding of Yorkshire.

Births, Marriages and Deaths

BIRTHS

BILLINGTON.—On Nov. 17, at Kampala, Uganda, the wife of Dr. W. Roy Billington—a son.
HAMILTON.—On Nov. 24, at Glasgow, the wife of Dr. James Hamilton, of Galston, Ayrshire—a daughter.
MORRAH.—On Nov. 18, at Trinidad, to Dr. Catherine Morrah, the wife of Michael Morrah—a daughter.
VATCHER.—On Nov. 21, at Chobham, Surrey, the wife of Dr. Sidney Vatcher—a son.

MARRIAGES

BARKER—PRICE.—On Nov. 21, at St. Leonards, Ernest Marriott Barker, M.B., to Cynthia Elizabeth Price.
LONGRIDGE—MASON.—On Nov. 24, at Crookham Church, Lieutenant Robert George Mallory Longridge, M.R.C.P., R.A.M.C., to Eleanor Margaret Mason.
MERRINGTON—VENABLES.—On Nov. 25, in London, William Robert Merrington, M.S., to Maxine Patricia Mary Venables.
NAIRN—SHERWOOD.—On Nov. 3, in Calcutta, Stanley James Granville Nairn, F.R.C.S.E., to Nora Sherwood.
WRIGHT—LEVER.—On Nov. 21, at Bolton, Lieutenant Philip Miall Wright, M.R.C.S., R.A.M.C., to Mary Lever.

DEATHS

BOND.—On Nov. 23, at Leicester, Charles John Bond, C.M.G., F.R.C.S., aged 83.
COX.—On Nov. 24, at Howth, co. Dublin, Robert Hanham Cox, F.R.C.S.I.
ECCLES.—On Nov. 25, at Worthing, George Tolcher Eccles, M.B. Camb., aged 73.
KNOX-SHAW.—On Nov. 22, in Oxford, Charles Thomas Knox-Shaw, M.R.C.S., aged 84.
PACE.—On Nov. 26, at Worthing, Harold Everett Pace, M.B. Lond., aged 71.
SCOTT.—On Nov. 21, Lindley Marcroft Scott, M.D. Aberd., M.R.C.P., of Wilbraham Place, London, S.W.1.
STUART.—On Nov. 24, at Taunton, Robert Stuart, M.R.C.S., aged 76.
TROTTER.—On Nov. 25, at Blackmoor, Hants, Wilfred Trotter, M.D., M.S. Lond., F.R.S.

NOTES, COMMENTS AND ABSTRACTS

THE E.M.S. IN CHINA

JUST before our European war broke out, the China medical aid committee working with the British fund for relief in China and a Norwegian organisation with similar aims sent out to China seventeen refugee doctors, most of whom had already served for long periods in Spain. Dr. Jensen, a member of the first party to go out, sends the following account of an emergency medical service which contrasts with what we have experienced in England in the last few weeks:

"We left Hongkong three days after our arrival there. This means that the Foreign Auxiliary to the Chinese Red Cross bought within three days all things we were in want of and provided us with the necessary visas—although we were in possession of rather suspicious Spanish passports—and also booked our tickets for the next boat sailing for Haiphong.

"Unfortunately the organising influence of the secretary, Mrs. Selwyn-Clarke, met its Waterloo in Indo-China, where heavy rains and poorly constructed railways were the main hindrances. We decided to leave our forty cases of instruments and medical supplies in Haiphong, hoping they would follow us later when the sun was more favourable. After we reached Dongdang, the Chinese border city, we made quick progress in our journey. Bombed and machine-gunned trucks on the road and a few destroyed houses told us the story of air-raids, with which we were only too familiar during our experience in Spain. Everywhere were to be seen soldiers in good uniforms, with however few arms, training and working. Groups were improving the motor roads and ferries—a country working at high pressure during a war. As we journeyed through the Kwangsi province, we enjoyed to the full the wonderful pineapples and bananas and all other kinds of food, remembering our daily meal of beans in Spain. Nanning, the capital of Kwangsi, is evacuated and dead during the day because of frequent air-raids by the Japanese. But it awakens in the evening and lives then an all the more active and intensive life with shoppers and traffic everywhere.

"After three days we reached Kweiyang, where the Emergency Medical Service Training School, of which Dr. R. K. S. Lim is director, is situated. It is run by the National Health Administration of the Interior and one's first impression is of a youth-camp belonging to one of the sporting associations in England or America. Girls, wearing the same kind of uniforms as the soldiers (grey shirts and shorts) are all being trained here together. But one's impressions are quickly altered if one scrutinizes these young people closely. They take their places in rows at the call of a bugle; their occupation is not sport but medical science and practice and the preparation of soldiers and volunteers for the war with all its difficulties and bitterness.

"I saw these students in the cholera ward of the military hospital, their grey uniforms tightly covered with white gowns and their faces protected by masks. There is an epidemic of cholera in Kweiyang and the deathsheadlike cholera facies of the patients whom these students are nursing and the eagerness of nurses prove how much they are in earnest. The school is a *de facto* university when we regard the qualification of the teachers. Many of them are professors and graduates of well-known Chinese and Western universities. Dr. Lim is professor at the Peiping Union Medical College and the son of Lim Boon Keng, an Edinburgh graduate who was the first Minister of Public Health under the old Manchu dynasty and the founder of Amoy University.

"The fighting army in China at present is about two million strong. The Army Medical Service at the outbreak of the war had not more than 60 graduate doctors at their disposal, while Dr. Lim had perhaps no more than 6 qualified doctors when he started his work. The average time required to transport wounded to a surgical hospital is three days or more, and there is a lack of all kinds of skilled personnel. There are 400 students in the Training School. Doctors who graduated some years ago are learning to construct latrines and delouse clothes, and simple soldiers are bent over microscopes or staining slides. Bed-making is learned with the same intensity as bacteriology, and the best way to carry the wounded is practised with as much attention as is given to intravenous injections."

Dr. Lim, his staff, and his students have certainly put into practice the oath which everyone is obliged to sign before joining the Red Cross or entering the Training School: "In view of the serious national situation during which everyone must lend his aid, I as a citizen pledge myself to follow the teaching of our late Leader Sun Yat Sen, to serve the country by observing orders and discipline and faithfully to devote myself, regardless of difficulties and dangers, to the service of the health of the nation, especially in the relief of the wounded and sick."

WHAT IS BLEACH OINTMENT?

AT Croydon Police-court a pharmacist was lately summoned for selling a preparation labelled "Bleach Ointment" which did not contain the same amount of available chlorine as the ointments prepared according to formulæ given in two air-raid handbooks issued by the Home Office. The summons was dismissed, but the case was interesting because the evidence disclosed that there is no legal standard for bleach ointment and that in fact two different formulas for its manufacture have been published by the Home Office. Bleach ointment in the peace-time sense may not be the same thing as bleach ointment for the specific purpose of treating mustard gas burns, and it is desirable that some authoritative definition of bleach ointment for war-time use should be laid down for the guidance of chemists. In other words a standard for "Bleach Ointment A.R.P." is needed.

CORRIGENDUM.—The author of "Diagnosis and Treatment of Diseases in the Tropics," reviewed on page 1122 of our issue of Nov. 25, was Dr. H. C. Trowell.

The Lancet 100 Years Ago

November 30, 1839, *p.* 366.

From a leading article on "Gatherings from Graveyards, particularly those of London," by G. A. Walker, Surgeon.

. . . It is a common reproach that medical men do not sympathise with the popular respect for the dead; that they are devoid of "feeling"; that, like the worm, "your great anatomist," they revel in reckless desecration, and have only an eye for the nerve and artery, the joint and sinew, but remain quite insensible to the tenderer emotions of our nature.

> "Physician art thou? One, all eyes,
> Philosopher! a fingering slave,
> One that would peep and botanize
> Upon his mother's grave?"

Nothing is more false or unjust than this imputation. The softer feelings of the heart are quite compatible with the exercise of the intellect; and if the medical philosopher investigates the causes and seats of diseases, discovers the means of disarming death and preventing sorrow, and seeks to render interment uninjurious to the living, and compatible with the health, happiness, and highest interests of mankind, he may smile at the sullen, ignorant sorrower, centered and coiled up in a supercilious, though poetical, sentimentality.